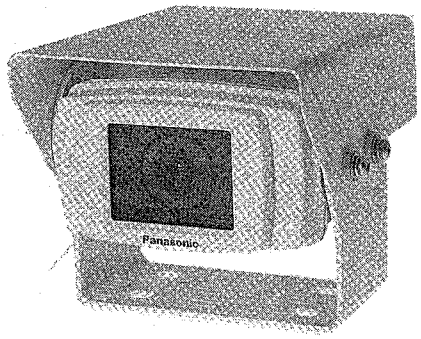
ORDER NO.AVS9403826C8

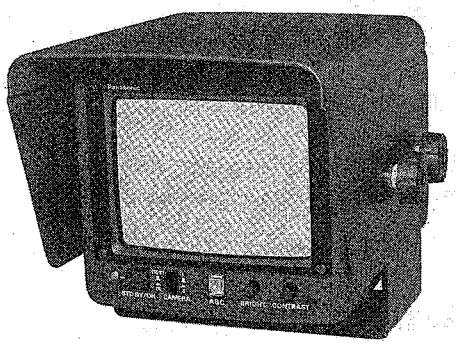
service Manual

Rear View Camera Monitor

GP-RV201E GP-RV202E



GP-RV201E



GP-RV202E

SPECIFICATIONS (GP-RV201E)

Power Source :	Supplied by specified monitor GP-RV202, WV-RV102 or WV-RV107
	Approx. 12V DC, 200 mA
Pick-up Device :	1/3" Interline Transfer CCD with 512 (H) x 582 (V) pixels
Scanning System :	2:1 Interlace
Scanning :	625 lines/50 fields/25 frames
	Horizontal: 15.625 kHz, Vertical: 50 Hz
Synchronization :	Internal
Horizontal Resolution :	380 lines
Video Output :	1.0Vp-p, 75Ω
Signal to Noise Ratio :	46 dB
Minimum Illumination :	0.5 lux at F1.4, AGC ON (Fixed)
Lens :	F1.4, f=2.2 mm, Auto Iris Control Lens
Angular Field of View :	100° (H) x 83° (V)
Vibration Resistance :	4.4G (10 Hz - 100 Hz)
Ambient Operating Temperature :	–30°C - +60°C (-22°F - 140°F)
Dimensions (Excluding Cover and Bracket) :	90 (W) x 54 (H) x 70 (D) mm
	3-9/16" (W) x 2-1/8" (H) x 2-3/4" (D)
Weight (Excluding Cover and Bracket) :	0.42 Kg (0.93 lbs.)

Weight and Dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORIES

Mounting Bracket .....1 pc
Cover .....1 pc

Panasonic

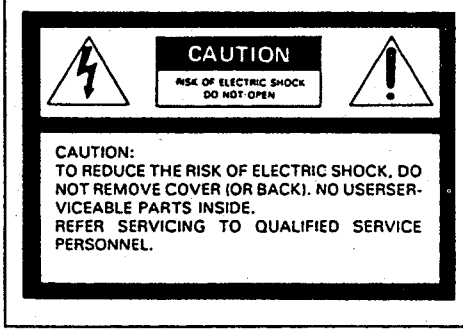
SPECIFICATIONS (GP-RV202E)

Power source :	12V DC 1.25A/24V DC 0.63A
DC Input Voltage for Power Source :	10V - 16V DC, 20V - 32 V DC
Power Consumption :	15W (ON Mode), 1.5W (STANDBY Mode)
Cathode Ray Tube :	5.5" Flat Square
Horizontal Resolution :	600 lines at center
Ambient Temperature :	–15°C - +60°C (5°F - 140°F)
Vibration Resistance :	4.4G (10 Hz - 100 Hz)
Ambient Humidity :	Less than 90%
Dimensions (Excluding Fixing Bracket and Hood) :	155 (W) x 140 (H) x 208 (D) mm 6-3/16" (W) x 5-1/2" (H) x 8-3/16" (D)
Weight (Including Fixing Bracket and Hood) :	3 Kg (6.6 lbs.)

Weight and dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORIES

Remote Cable	1pc.
Monitor Hood	1pc.
Distance Seal	1pc.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USERSER-VICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns the user that uninsulated voltage within the unit may have suificient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included.
Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the "⚠" mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be repleced with manufacture's specified parts to prevent shock, fire, or other hazards.
Do not modify the original design without permission of manufacture.

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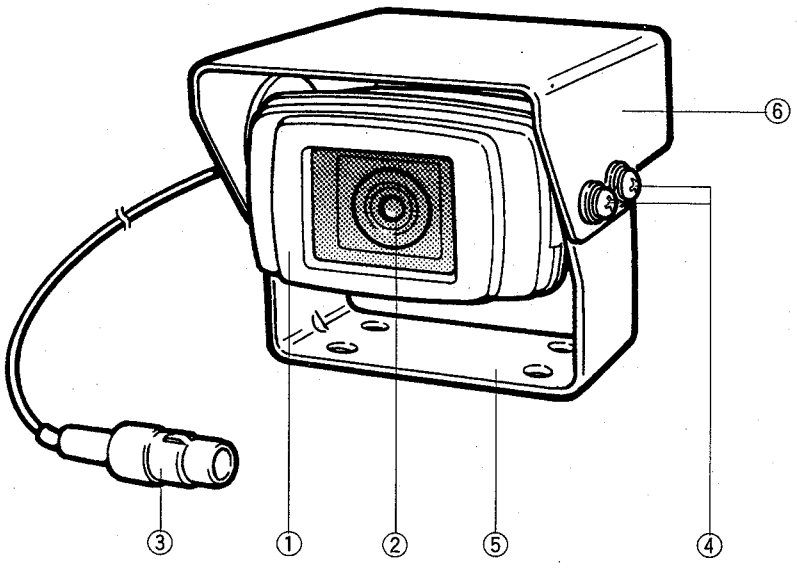
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS (GP-RV201E)



1. Camera Unit
The 1/3" CCD B/W camera is inside.
Caution :
Even though the camera unit is installed in the water-proof housing, do not spray a water jet directly at the camera unit for cleaning purposes.

2. Lens
The auto iris wide angle lens is installed.
The focal length is 2.2mm.
Note :
Keep the lens glass always clean.

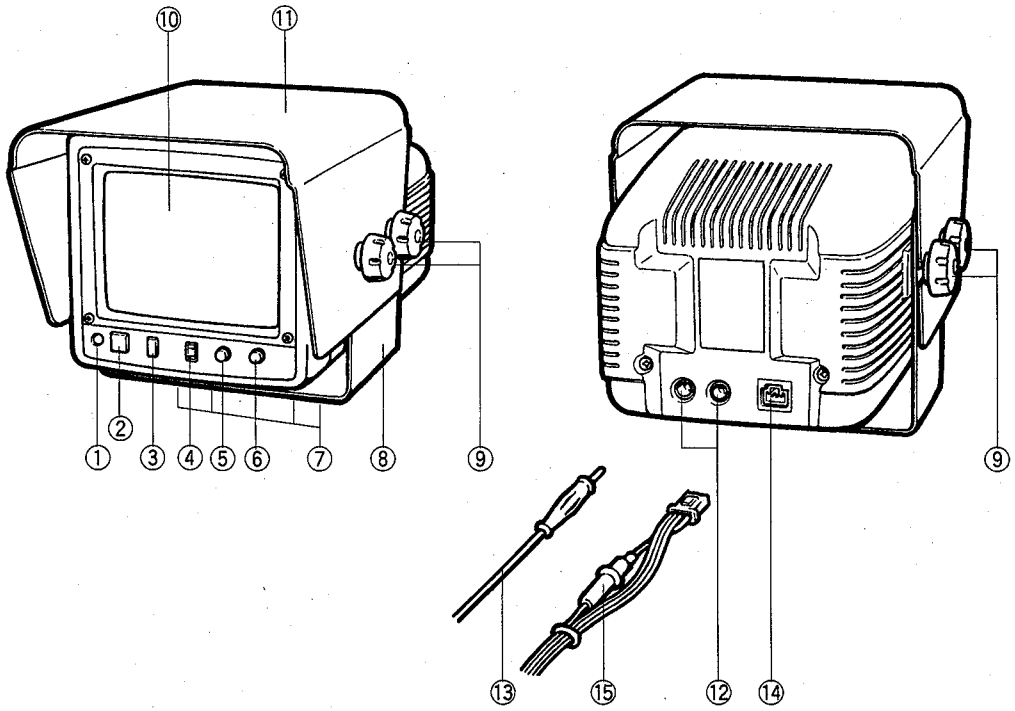
3. Camera Cable Connector
This connector is a drip-proof type connector and is used to connect the optional camera cable GP-CA40 (10m/33ft) or GP-CA41 (20m/66ft).
Caution :
Whenever disconnecting the camera cable from this connector for maintenance, turn the vehicle's ignition switch to the LOCK position to turn off the power.

4. Camera Angle Adjusting Screws
These 4 screws are used to secure the camera unit. By changing the fixing position of these screws, the vertical field of view angle of the camera can be changed approx. 70°.

5. Bracket
This bracket is used to secure the camera onto the vehicle.

6. Cover

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS (GP-RV202E)



1. **Mode Indicator**
   This indicator shows the operation mode as follows.
   STANDBY :
   The indicator will be lit green.
   ON :
   The indicator will be lit amber.

2. **Mode Selection Switch (STANDBY/ON)**
   This switch is used to select the operation mode as follows.
   STANDBY :
   The heater of monitor's CRT is preheated and all other circuits including the rear view camera are shut off.
   ON :
   The rear view picture will be displayed on the monitor.

Note :
Picture of Camera A will be displayed on the monitor screen when the Remote Input Signal is applied to the power source connector (DC IN/REMOTE) even the monitor is in the STANDBY mode or Camera B is selected.

3. **Camera Selection Switch (CAMERA A, B)**
   This switch is used to select the camera.
   A (Upper position):
   Picture of camera A will be displayed on the monitor.
   B (Lower position):
   Picture of camera B will be displayed on the monitor.

Note :
1. The picture of Camera A is a rear view picture (reversed picture).
2. The picture of camera B can be changed from rear view picture (reversed picture) to normal picture by changing the picture selection switch SW401 of this monitor and mount the camera upside down.
3. When the monitor GP-RV202E is shipped from the factory, the picture selection switch SW401 is set to MIRROR position. (Refer to chapter "INSTALLATION").

4. **Automatic Brightness Control Sensor (ABC)**
This sensor detects the ambient luminance to compensate the brightness as follows.

Ambient Luminance	Brightness Compensation
More than 5 lux	No Compensation
Less than 5 lux	Reduce it approx. 20%

5. **Brightness Control (BRIGHTNESS)**
This control is used to adjust the brightness of the picture on the monitor.

6. **Contrast Control (CONTRAST)**
This control is used to adjust the contrast of the picture on the monitor.

7. **Fixing Holes**
These 4 holes are used to fix the monitor fixing bracket to the vehicle.

8. **Monitor Fixing Bracket**
This is used to install the monitor to the vehicle.

9. **Monitor Fixing Screws**
These 4 screws are used to secure the monitor.
The tilt of the monitor can be changed approx. 30° (20° : Upper or 10° : lower) by loosening these screws.

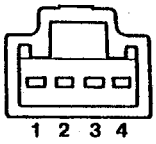
10. **Non-glare panel**

11. **Monitor Hood**

12. **Camera Input Connector (CAMERA A, B)**
These connectors are used to connect the optional camera cables GP-CA40 (10m, 33ft), or GP-CA41 (20m, 66ft).

13. **Camera Cable (Sold Separately)**

14. **Power Source and Remote Connector (DC IN/REMOTE)**
This 4-pin connector is used to connect the power and remote cable.
Pin No.1 : Ground
Pin No.2 : Ground
Pin No.3 : Remote Input (Reverse position)
Pin No.4 : +12V DC or +24V DC Input



<Front View>

15. **Fuse Holder**
Caution :
When replacing the fuse, use only specified one (3.15A, Part NO. XBA2C31ET0A).

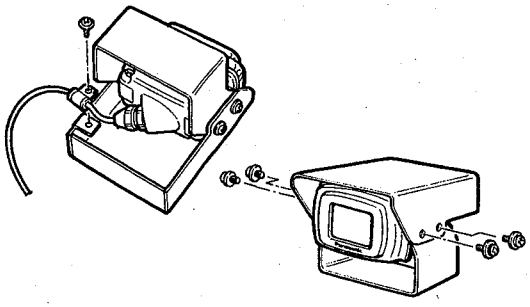
INSTALLATION PROCEDURE (GP-RV201E)

Caution:

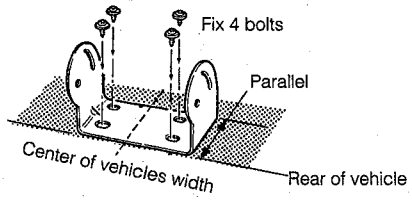
1. The following installation should be done by qualified service personnel or system installers.
2. It is suggested to make proper cable protection to avoid damage to the cable when pulling the connection cable to outside the vehicle.

■ Mounting the camera onto the top of rear-end roof of the vehicle

1. Remove 1 camera cable clamp screw and 4 camera angle adjusting screws, and remove the cover and camera unit from the bracket.

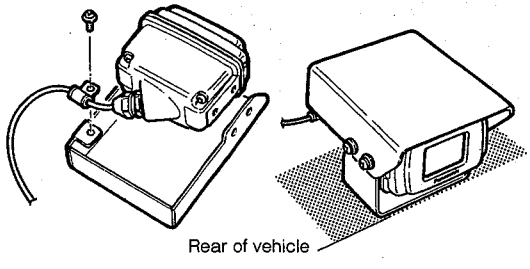


2. Secure the bracket onto the top of the rear-end roof by using 4 bolts (obtained locally (6 mm diameter bolt)).

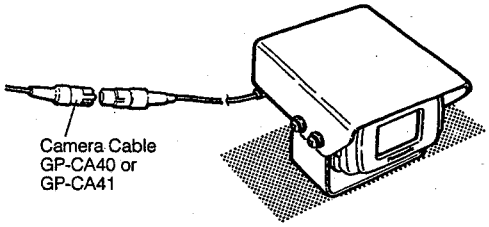


Note: Secure the camera so that the camera position is in parallel with the rear-end line of vehicle.

3. Fix the camera cable by using 1 camera cable clamp screw, and mount the camera unit and cover onto the bracket and fix the camera unit by using 4 camera angle adjusting screws.

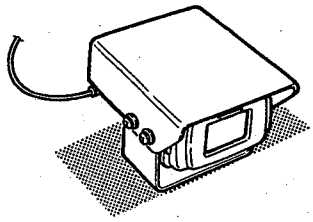


4. Connect the optional camera cable between the Camera Cable Connector (3) and camera input connector of monitor.



Notes:

1. The camera cable connection should be done in the vehicle.
2. To obtain the normal picture, install the camera upside down, and connect the camera cable to the camera B input connector (CAMERA B) of Monitor GP-RV202E.



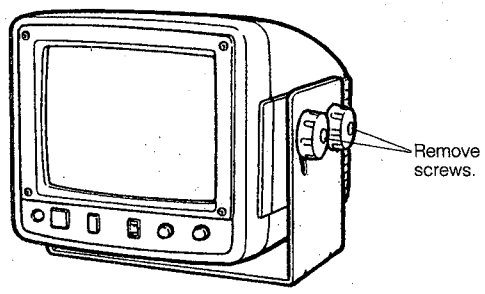
Refer to Operating Instructions of GP-RV202 for the details.

INSTALLATION (GP-RV202E)

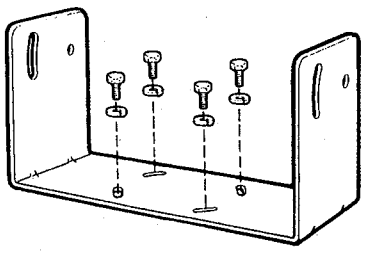
Caution :

1. The following installation should be done by qualified service personnel or system installers.
2. It is suggested to make proper cable protection to avoid damage to the cable when pulling the connection cable to outside the vehicle.

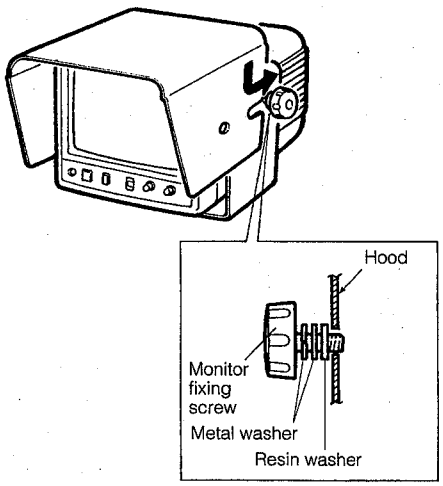
1. Remove the 4 monitor fixing screws which are hold the monitor and remove the monitor fixing bracket.

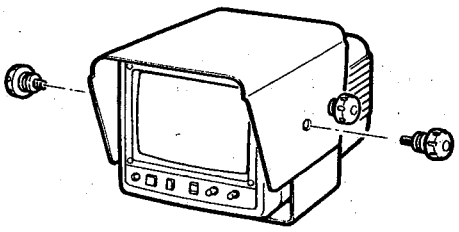


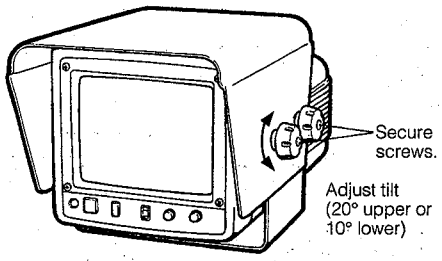
2. Secure the monitor fixing bracket by using 4 bolts (obtained locally (6mm/diameter bolt)).



3. Mount the monitor and monitor hood onto the monitor fixing bracket and secure the monitor by using 4 monitor fixing screws as shown below.



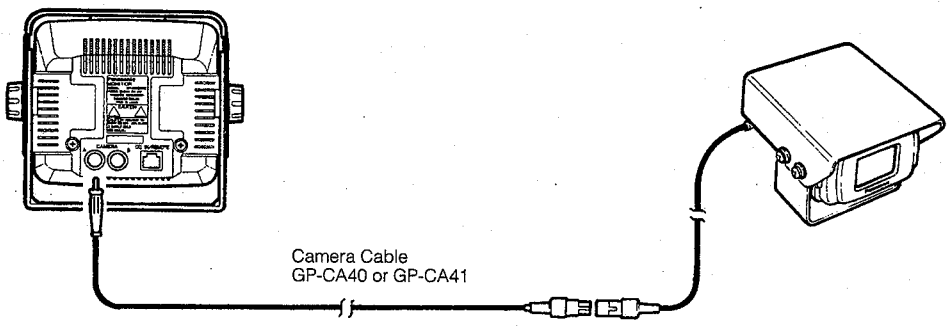




CONNECTIONS

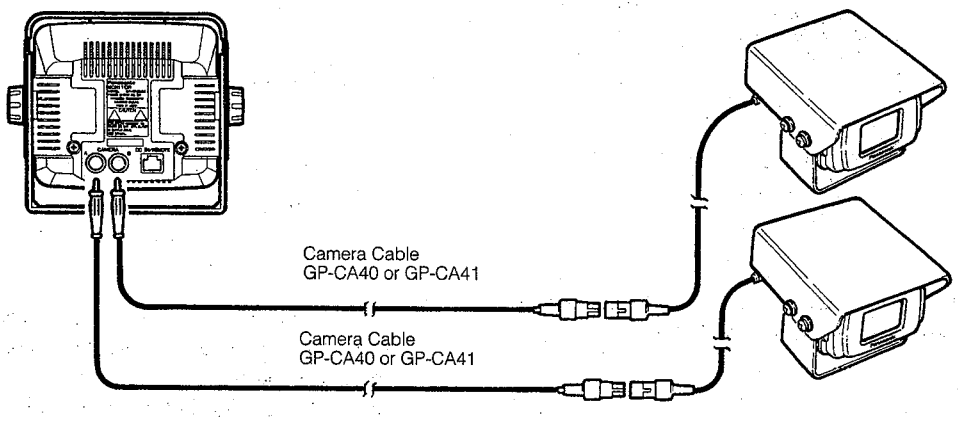
Caution: The following connection should be done by qualified service personnel or system installers.

1. One Rear View Camera Connection (The Camera A input is a rear view (reversed) picture)



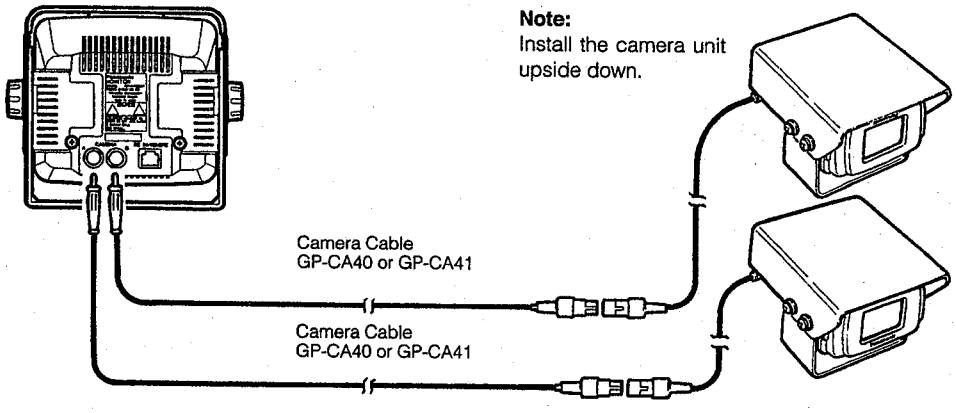
1. Connect the optional camera cable to the camera A input connector (CAMERA A) on the rear of the monitor.
2. Connect the supplied remote cable to the power source and remote connector (DC IN/REMOTE) on the rear of the monitor.
3. Connect the +12V/+24V wire (Red) to the +12V/+24V line which is electrically after the ignition switch, the remote input wire (Blue) to the +12V/+24V line for the reverse light and the ground wire (Black) with lug to the chassis of the vehicle.

2. Two Rear View Camera Connection (Both Camera A and Camera B inputs are rear view (reversed) pictures)



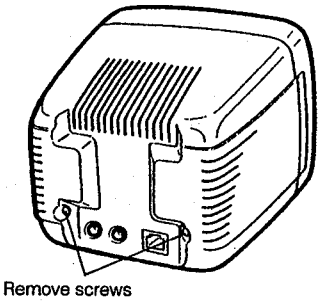
1. Connect the optional camera cable to the camera input connectors (CAMERA A and CAMERA B) on the rear of the monitor.
2. Connect the supplied remote cable to the power source and remote connector (DC IN/REMOTE) on the rear of the monitor.
3. Connect the +12V/+24V wire (Red) to the +12V/+24V line which is electrically after the ignition switch, the remote input wire (Blue) to the +12V/+24V line for the reverse light and the ground wire (Black) with lug to the chassis of the vehicle.

3. Two Rear View Camera Connection (The Camera A input is a rear view (reversed) picture and Camera B input is a normal picture)

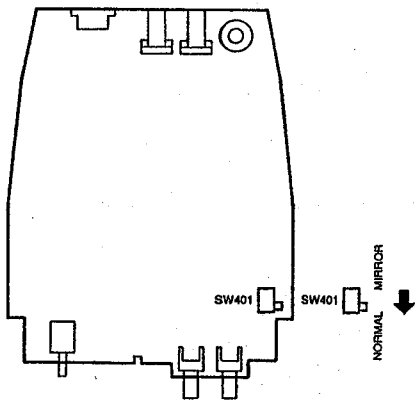


Caution : To obtain the normal picture at Camera B input connector, mount the camera upside down for Camera B input and change the internal switch of the monitor as follows.

1. Remove Rear cover of monitor by removing 2 screws which hold the rear cover.



2. Change the internal switch SW401 on the main board to NORMAL from MIRROR position.



3. Cover the Rear cover by fixing the 2 screws.

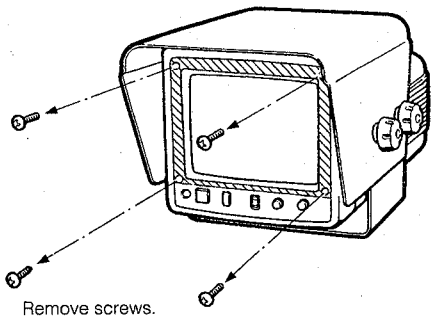
Note : Picture Selection Switch SW401 is set to MIRROR position at factory.

4. Connect the optional camera cable to the camera input connectors (CAMERA A and CAMERA B) on the rear of the monitor.
5. Connect the supplied remote cable to the power source and remote connector (DC IN/REMOTE) on the rear of the monitor.
6. Connect the +12V/+24V wire (Red) to the +12V/+24V line which is electrically after the ignition switch, the remote input wire (Blue) to the +12V/+24V line for the reverse light and the ground wire (Black) with lug to the chassis of the vehicle.

ADJUSTMENT

The following adjustment should be done by qualified service personnel or system installers.

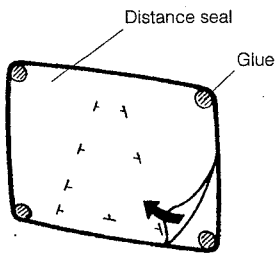
1. Remove the non-glare panel from the monitor by removing 4 screws.



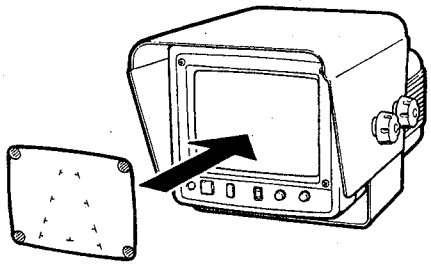
2. Remove the protection seal for scratches from the distance seal.

Note :

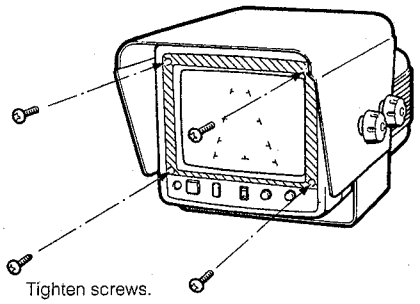
By putting the distance seal onto the monitor screen, the ambient light may be reflected even the monitor screen is a non-glare type. when less reflection is required, do not put the distance seal onto the monitor screen.



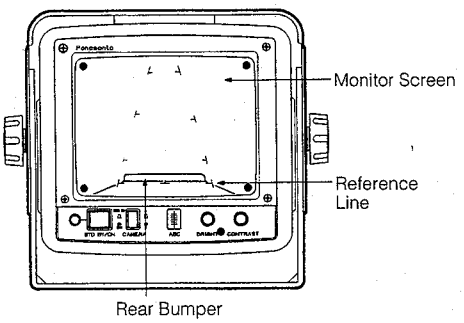
3. Clean the monitor screen and put the distance seal onto the monitor screen.



4. Fix the non-glare panel onto the monitor by using 4 screws.



5. Turn the ignition switch to the ON position and confirm that mode indicator lights to green (STANDBY mode) and press the mode selection switch once.
6. Adjust the camera's tilt by first loosing the 4 camera angle adjusting screws and then tilting the camera so that the rear bumper positions on the reference line of the distance seal on the monitor screen.

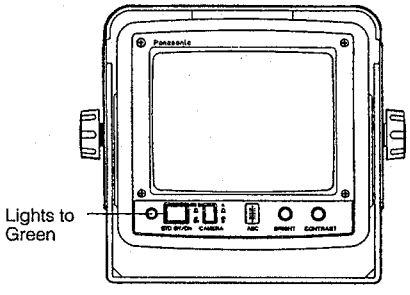


Caution :

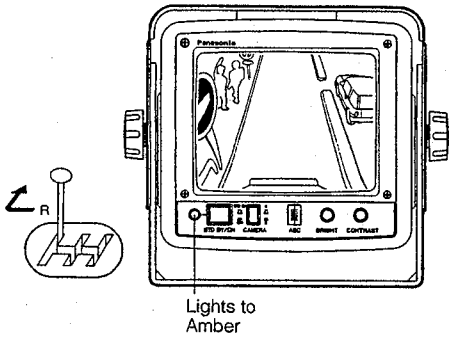
The distance lines indicated on the distance seal are distances on ground level. Obstacles in mid air may seem to be more distant than they actually are.

OPERATING PROCEDURE

1. Turn the ignition switch to the ON position and confirm that the Mode Indicator lights to green (STANDBY mode).



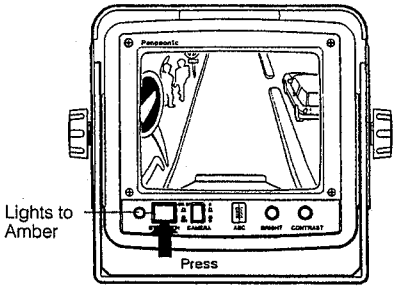
2. Whenever changing the gear shift lever to the reverse position, the Mode Indicator turns to amber (ON mode) and the rear view picture of Camera A can automatically be seen on the monitor screen in a few seconds.



Note: To obtain the rear view picture of Camera B, press down the Camera Selection Switch.

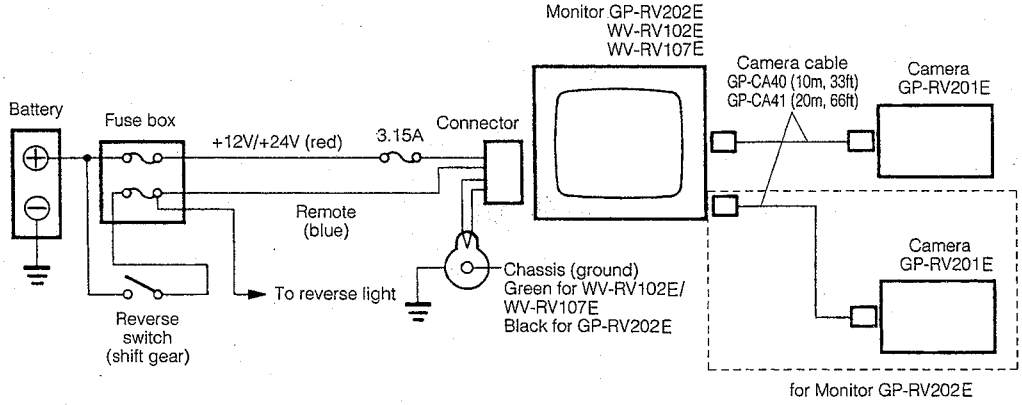
3. Whenever changing the gear lever to other than the reverse position, the Mode Indicator turns to green and the picture on the monitor will disappear.

4. Even the gear shift lever is not in the reverse position, the rear view picture can be seen by pressing the Mode Selection Switch once.



5. Adjust the Brightness and Contrast controls for desired brightness and contrast.
6. To reset the monitor to the STANDBY mode, press the Mode Selection Switch once again.

SYSTEM CONNECTION



Note : For detail technical information of WV-RV102E, please refer to WV-RV100 Service manual (order no. AVS87112061C8).
For detail technical information of WV-RV107E, please refer to WV-RV105 Service manual (order no. AVS88082101A8).

CIRCUIT DESCRIPTION

1. Outline of Rearview System (Rearview Camera GP-RV201E and Monitor GP-RV202E)

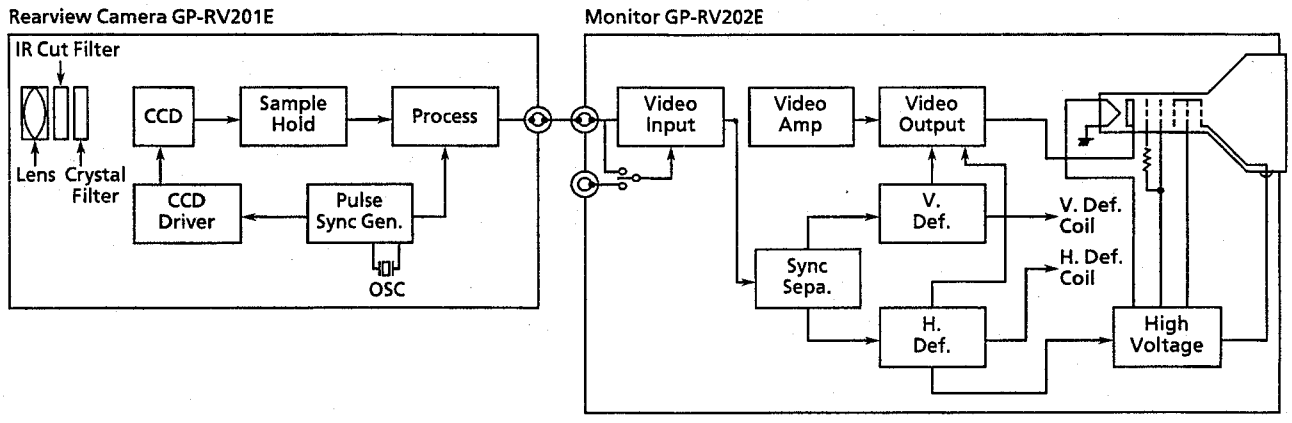


Fig. 1-1 Overall Block Diagram

The incoming light which passes through the lens and infrared cut filter reaches the surface of the CCD image sensor.
When the incoming light reaches the surface of the CCD image sensor, the CCD image sensor converts light into electric signal and converted signal is sent to the sample hold circuit.
The pre-video signal obtained at the sample hold circuit is fed to the process circuit.
The sync generator circuit generates the necessary signals and pulses. The generated signals and pulses are fed to the other circuits.
The video signal is mixed with sync signal at process circuit and produces composite video signal.
The composite video signal supplies to the monitor through coaxial cable and DC power supplies from the monitor to the camera with same coaxial cable.

The video signal from the camera is supplied to the video input circuit in the monitor and then fed to the video amplifier circuit and the sync separator circuit.
The separated sync signal is fed to the horizontal and vertical deflection circuits to generate horizontal and vertical deflection signals.
The vertical deflection circuit also generates the vertical blanking pulse and fed to the video output circuit.
The amplified video signal is sent to the video output circuit and mixed with the vertical blanking signal.
The mixed video signal is then fed to G1 of CRT and obtained at the monitor screen.
The horizontal deflection signal is also fed to the high voltage circuit to generate high voltage.
The high voltages are fed to grid of CRT.
The horizontal blanking signal is fed to the cathode of CRT.

2. Rearview Camera GP-RV201E

2-1. Sensor Board

This board receives the pulses from the CCD drive pulse generator(IC4) in the process board to drive CCD image sensor. The modulated CCD output signal obtained at pin 4 of IC1 is fed through buffer Q1 to the process board to convert it into the video signal.

2-2. Process Board

This circuit receives the modulated CCD output signal and generates video signal.

2-2-1. Sample Hold Circuit

The modulated CCD output signal is obtained at pin 2 of CN1 is supplied through pins 22 and 23 to clamp circuit in IC3 where the modulated CCD output signal is clamped by specified DC voltage. The clamped signal is then sent to the sample hold circuit which eliminates reset pulse and noise component from CCD output signal and detects pre-video signal. This signal is amplified in IC3 and amplified pre-video signal is fed to low pass filter(L8,C20) which removes horizontal transfer pulse component from pre-video signal.

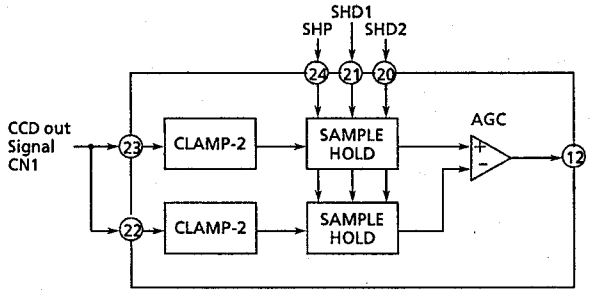


Fig. 2-2-1 Sample Hold Circuit

2-2-2. Gamma Correction Circuit

In gamma correction circuit, video signal is corrected to the non-linear photoelectric conversion characteristic of cathode ray tube(CRT) and this circuit reproduces a linear picture of high fidelity on the monitor.
In order for televised picture to have the same contrast graduation as the original scene, the gamma of the system including CCD image sensor, signal processing inside camera and monitor must be equal to 1.0.
The gamma characteristic of CCD image sensor is approximately 2.2, so that the gamma characteristic of the gamma correction circuit should be approximately 0.45 which makes the total gamma to be approximately 1.0.
The gamma corrected video signal is supplied to Y-gain control circuit.

2-2-3. Automatic Iris Control Detection Circuit

The pre-video signal is fed from the pre-blanking mixing circuit to the modulation circuit, where the pre-video signal is modulated by wide blanking(CBLK) pulse. The modulated pre-video signal is peak-rectified in the modulation circuit and converted into DC voltage corresponding to the luminance level. i.e., the incoming light intensity. This DC voltage is fed through pin 27 of IC3 to the iris control(ALC) circuit in the power board.

2-2-4. Automatic Gain Control Circuit

The video signal from the AGC in IC3 is fed through the L.P.F.(L8,C20) and clamp circuit is fed to AGC detect circuit in IC3. In the AGC detect circuit converts into DC voltage corresponding to the video signal level from the video signal that is, incoming light intensity. The DC voltage is obtained at pin 13 and fed through pin 19 of IC3 to the AGC control circuit where it is compared with the reference DC voltage. The error between the DC voltages is fed to AGC amplifier to control its gain.
When the camera is used in the normally illuminated scene, the amplitude of gain control circuit does not change. However, when the camera is aimed at the weakly illuminated scene, the video signal level is decreased. The decreased video signal level is detected by the AGC detection circuit and it is amplied to specified level.

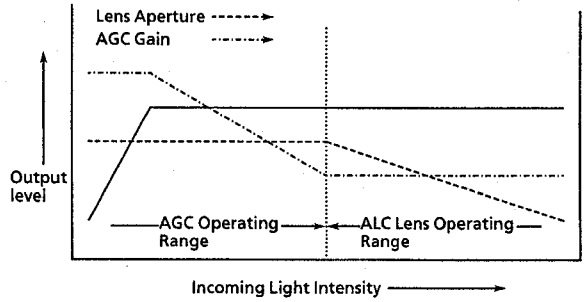


Fig. 2-2-2 Automatic Gain Control

2-2-5. Video Signal Processing Circuit

The video signal is supplied to pin 7 of IC3 and the video signal is forwarded to clamp circuit where the blanking level of the video signal is clamped by clamp pulse-1(CLP-1) which supplied from CCD drive pulse generator(IC4).
The clamped video signal is then sent to the white clip circuit and set up circuit, where it is mixed with the blanking pulse. The white clip circuit clips the high level signal and set up circuit setting the pedestal level.
The video signal is mixed with the sync signal through pin 4 of IC3 in the video output circuit forming a composite video signal. The video signal is obtained at pin 32 of IC3 is fed to the monitor through the power board and coaxial cable.

2-2-6. Pulse Generator Circuit

This circuit generates the necessary pulses to produce the video signal.

• Drive Pulse

The horizontal transfer pulse 1, 2(H1, H2) are obtained at pins 37 and 38 of IC4 are supplied to CCD image sensor in Sensor board.
The reset pulse(R) obtained at pin 42 of IC4 is supplied to CCD image sensor.
The vertical transfer pulse 1, 2, 3 and 4(V1, V2, V3 and V4) are generated in IC4 and are obtained at pins 45, 46, 47 and 48 of IC4. These pulses are supplied to V.Driver IC2 where their levels are converted to specified DC level according to the fixed timing for producing vertical transfer pulse(ϕV1 - ϕV4).
The field shift pulses 1, 2(CH1, CH2) obtained at pins 49 and 50 of IC4 are supplied to pins 7 and 10 of IC2 and mixed with V1 and V3 pulses.

• Sync Signal

The composite blanking pulse(CBLK) obtained at pin 13 of IC4 is fed to pin 29 of IC3 through inverter IC8. The composite sync pulse(CSYNC) obtained at pin 14 of IC4 is fed to pin 4 of IC3.
The clamp pulse for optical black(CPOB) and the clamp pulse-2(CP2) obtained at pins 9 and 11 of IC4 are fed to pins 30 and 25 of IC3. The wide horizontal drive pulse(WHD) is obtained at pin 12 of IC4 and is fed to base of Q5(DC/DC converter).

The pin identification of pulse generator IC4 is as follows.

Pin No.	Name	In/Out	Description
1	VSS	---	Ground
2	LLDET	---	Not Used
3	FFSW	---	Not Used
4	CLR	---	Not Used
5	TST1	---	Not Used
6	TST2	---	Not Used
7	VD	Out	Vertical Drive Pulse
8	PBLK	---	Not Used
9	CPOB	Out	Clamp Pulse for Optical Black
10	CP1	---	Not Used
11	CP2	Out	Clamp Pulse-2
12	WHD	Out	Wide Horizontal Drive Pulse
13	CBLK	Out	Composite Blanking Pulse
14	CSYNC	Out	Composite Sync
15	LP	---	Not Used
16	GLSYNC	---	Not Used
17	GLVD	---	Not Used
18	VD2	---	Not Used
19	TST3	---	Not Used
20	TST4	---	Not Used
21	FCK	---	Not Used
22	VPCO	---	Not Used
23	ALCM	---	Not Used
24	VSSI	---	Ground
25	VC1	---	Not Used
26	COIN	In	External VCO
27	COOUT	---	Not Used
28	VDD	In	Power
29	VC2	---	Not Used
30	CXIN	In	4fsc In
31	CXOUT	Out	4fsc Out
32	VDD	In	Power
33	VSS	---	Ground
34	DS1	Out	Sampling Hold Pulse-1
35	DS2	Out	Sampling Hold Pulse-2
36	VDD	In	Power
37	H1	Out	Horizontal Transfer Pulse-1
38	H2	Out	Horizontal transfer Pulse-2
39	TST5	---	Not Used
40	RWO	Out	Reset Pulse Width
41	RWI	In	Reset Pulse Width
42	R	Out	Reset Pulse
43	VSS	---	Ground
44	TST6	In	Not Used
45	V1	Out	Vertical Transfer Pulse-1

46	V2	Out	Vertical Transfer Pulse-2
47	V3	Out	Vertical Transfer Pulse-3
48	V4	Out	Vertical Transfer Pulse-4
49	CH1	Out	Field Shift Pulse-1
50	CH2	Out	Field Shift Pulse-2
51	SUB	---	Not Used
52	MDSEL	---	Not Used
53	RCTL	---	Not Used
54	DRCT	---	Not Used
55	DIST	---	Not Used
56	VDD	In	Power
57	SS1	---	Not Used
58	TEST	---	Not Used
59	SS2	---	Not Used
60	M1	---	Not Used
61	M2	---	Not Used
62	M3	---	Not Used
63	PNSW	---	Not Used
64	VDD	In	Power

2-2-7. Vertical Transfer Pulse Driver

This circuit receives vertical transfer pulses and field shift pulses from IC4 and generates CCD drive pulses.

The pin identification of vertical transfer pulse driver IC2 is as follows.

Pin No.	Name	In/out	Description
1	VL	In	Low Bias
2	ϕV2	Out	ϕV2 Pulse
3	VM1	In	Middle Bias(Ground)
4	ϕV1	Out	ϕV1 Pulse
5	VCC	In	Power(+5V)
6	V1	In	Vertical Transfer Pulse-1
7	CH1	In	Field Shift Pulse-1
8	V2	In	Vertical Transfer Pulse-2
9	V4	In	Vertical Transfer Pulse-4
10	CH2	In	Field Shift Pulse-2
11	V3	In	Vertical Transfer Pulse-3
12	GND	---	Ground
13	VH	In	High Bias(+15V)
14	ϕV3	Out	ϕV3 Pulse
15	ϕV4	Out	ϕV4 Pulse
16	VM2	In	Middle Bias(+1V)

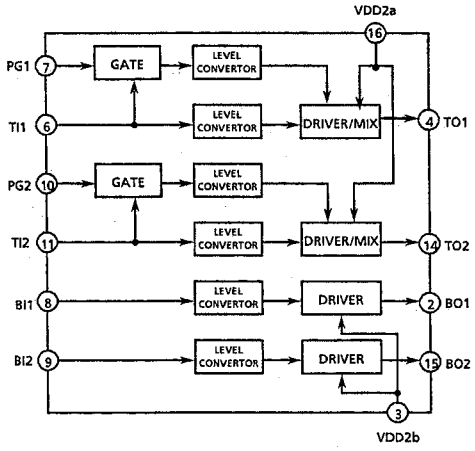


Fig. 2-2-3 Block Diagram of IC2

2-3. Power Board

2-3-1. Impedance Converter and +9V Voltage Regulator Circuit

Approx. +16V DC voltage supplied from the monitor(GP-RV202E) is fed to +9V regulator circuit consisting of Q2, Q8, and Q1 through impedance converter Q4, which converts the impedance of power from high to low. The Q2 amplifies the error between the 6V zener diode D2 reference and its base potential and forward it to Q8.

2-3-2. ALC Control Circuit

The iris control circuit controls the lens iris automatically. The ALC drive signal is supplied from the process board to pin 2 of IC4(b) through Q10 and amplified. Then it is sent from pin 1 of IC4(b) to drive coil of lens iris in order to open or close the lens iris.
The induced voltage is fed from lens damper coil to pin 5 of of IC4(a) and amplified. Then amplified signal is fed from pin 7 of IC4(a) to pin 2 of IC4(b) to damp the lens iris hunting.

3. Monitor GP-RV202E

3-1. Main Board

3-1-1. Voltage Stepup and Constant Current Circuit

The +16V DC voltage is produced from +8.5V DC voltage in the voltage stepup circuit and applied to constant current circuit.In order to compensate the difference of voltage drop due to the coaxial cable length(CAMERA CABLE) between the monitor and rearview camera, this circuit applies the constant current to the camera according to camera cable length.
The stepped up +16V DC voltage generated by the voltage stepup circuit is supplied to constant current circuit. The current fed through Q201 to the camera is set by R203, VR201, R204 and IC208 to steady state.

3-1-2. Video Amplifier Circuit

The video signal is applied to the base of Q308 and the collector of Q201 through connector CN2.
The video signal is obtained at the emitter of Q310 through the Q308 and Q309. It is fed to VR301(CONTRAST) and the pin 15 of IC401(H.V.DEFLECTION) to generate the vertical deflection sawtooth and the horizontal deflection sawtooth signals. Then controlled video signal is sent to the base of Q303 and the amplified video signal is then sent to the base of Q305. The clamp signal is applied to base of Q305 to clamp the blanking period.
The clamped video signal is sent to the base of Q307. Then video signal is applied to the CRT.
The VR303(SUB-BRIGHT) is a control for brightness of the picture by controlling the gain of video output signal.

3-1-3. High Voltage Circuit

The flyback pulse obtained at the collector of Q405 is applied to the primary winding(pin 3) of flyback transformer(T2) for boost the flyback pulse to necessary level.
The boosted pulses obtained at the secondary winding of T2 are rectified to generate high voltages.
The 8kV obtained by rectifying the boosted pulse with multiplier in T2 is supplied to the anode of the CRT.
The +400V DC obtained by rectifying the boosted pulse from pin 10 of T2 with D408 is supplied to grid-2(G2) of the CRT.

ADJUSTMENT PROCEDURE

1. Required Test Equipments

The following test equipments are required for adjustment of rearview camera GP-RV201E and monitor GP-RV202E.

- Oscilloscope (50 MHz band width)
- Digital Volt Meter (DVM)
- Ampere Meter
- Frequency Counter
- Lighting Set (2750 ± 150 lux)
- Lux meter
- DC Power Supply Unit (10 - 32V DC, 3A)
- Logarithmic gray scale chart (Part No. YWV2310RB99)
- Resolution chart (Part No. YWV1400RB99)
- Ball/White set chart (Part No. YWV2100RB03)

2. Disassembling Procedure for Adjustment

2-1. Rearview Camera GP-RV201E

- Remove one camera clamp screw and four camera angle adjusting screws, and remove the cover and camera unit from the bracket.

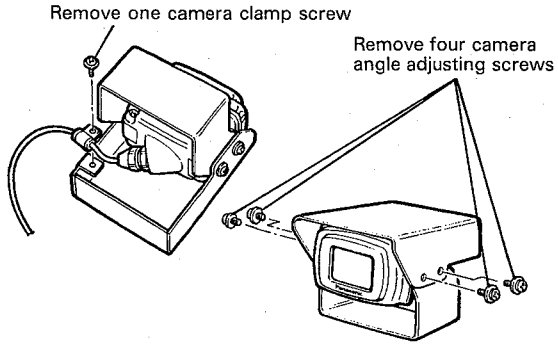


Fig. 2-1-1

- Remove four screws which hold the rear cover and remove the rear cover.

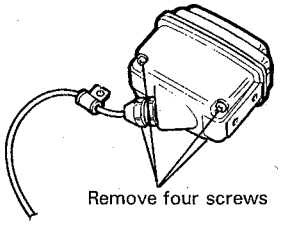


Fig. 2-1-2

2-2. Monitor GP-RV202E

- Remove four monitor fixing screws, and remove monitor hood.

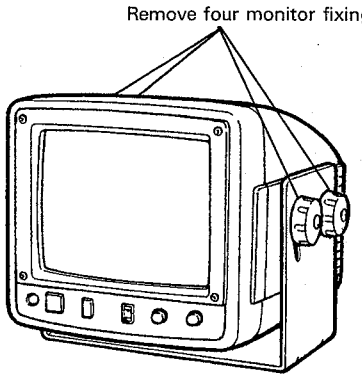


Fig. 2-2-1

- Remove 2 screws which hold the rear cover and remove the rear cover.

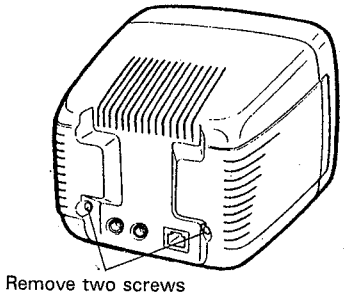


Fig. 2-2-2

3. Replacement Procedure

3-1. CCD Assy Replacement Procedure

- Disassemble the rearview camera while referring to the **2. Disassembling Procedure for Adjustment.**
- Remove the connector CN2 from the power board.
- Remove four screws and remove the front cover.

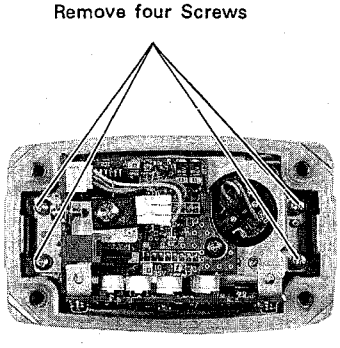


Fig. 3-1-1

- Remove four screws which hold the process and power board.

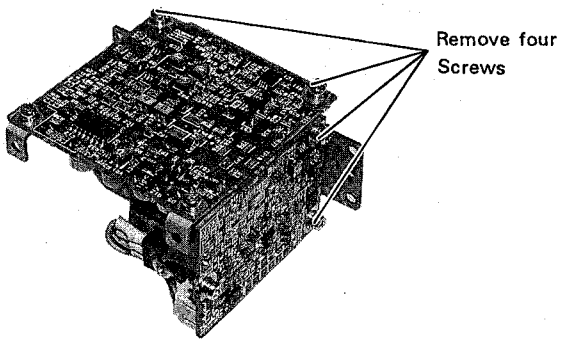


Fig. 3-1-2

- Remove flexible board CN1 and connector CN3 from the power board.
- Remove CCD Assy from process and power board.
- Reassemble the camera by reverse procedure of disassembling.

3-2. CRT Replacement Procedure

- Disassemble the monitor while referring to the **2. Disassembling Procedure for Adjustment.**
- Remove two screws which hold the chassis angle and remove the chassis angle.
- Disconnect the anode cap.
  Caution : Make sure that anode voltage is completely discharged by directly connected between anode terminal and chassis.
- Disconnect the CRT socket board by pulling it to backward.
- Loosen the screw which hold the deflection yoke assy and remove deflection yoke assy by pulling it to backward.

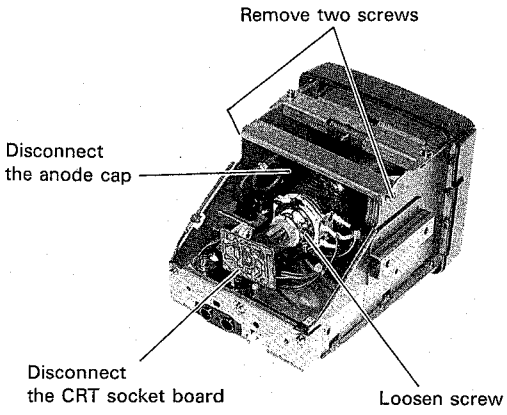


Fig. 3-2-1

- Remove four screws which hold the front panel and CRT, and remove the CRT with front panel.

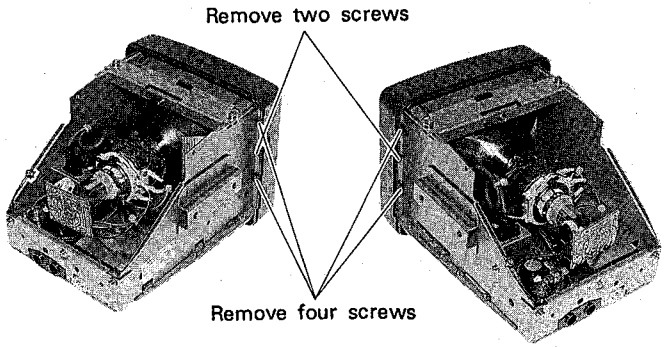


Fig. 3-2-2

- Remove two screws which hold the CRT and remove CRT from the front panel.
- Reassemble the monitor by reverse procedure of disassembling.

4. Adjustment Procedure

4-1. Connection and setting up for Adjustment

Connection

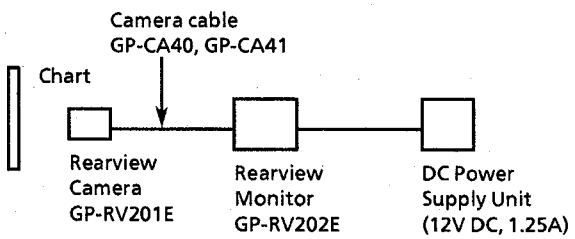


Fig. 4-1-1

- Connect rearview camera GP-RV201E to camera input connector (A) of rearview monitor GP-RV202E with camera cable GP-CA40 or GP-CA41.
- Connect the power supply unit (12V DC) to rearview monitor with Remote Cable.

Setting up

- Test chart : Logarithmic gray scale chart for camera adjustment.
  Resolution chart for monitor adjustment.
  Ball/White set chart for monitor adjustment.
- Lighting : 2750 ± 150 lux

4-2. Rearview Camera Adjustment

- The Monitor must be completely aligned before camera adjustment is made.
- Refer to page 20 for the location of test points and adjusting controls.

(1) V-sub Coarse Adjustment

Test point :	**TP3 (CCD OUT)**	**Process board**
Adjustments :	**VR1 (V-SUB)**	**Process board**
	VR1 (ALC LEVEL)	**Power board**

- Aim the camera at logarithmic gray scale chart.
- Connect the oscilloscope to TP3 on the process board.
- Adjust VR1 (ALC LEVEL) on the power board so that the video level at TP3 becomes 600 mVp-p.

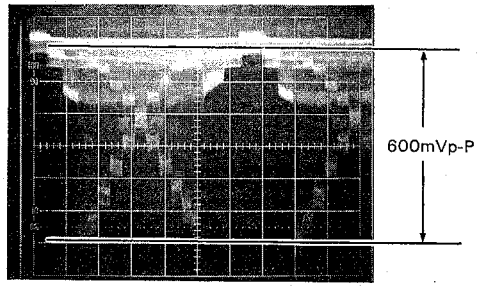
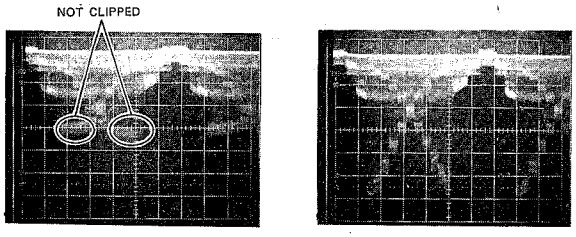


Fig. 4-2-1

- Adjust VR1 (V-SUB) on the process board so that the video signal at TP3 should not be clipped.



NO GOOD **GOOD**

Fig. 4-2-2

(2) ALC Adjustment

Test point :	**TP3 (CCD OUT)**	**Process board**
Adjustment :	**VR1 (ALC LEVEL)**	**Power board**

- Aim the camera at logarithmic gray scale chart.
- Connect the oscilloscope to TP3 on the process board.
- Adjust VR1 (ALC LEVEL) on the power board so that video level at TP3 becomes 200 ± 10 mV.

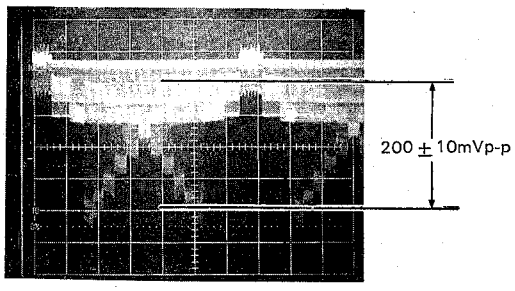


Fig. 4-2-3

(3) AGC Gain Adjustment

Test point :	**TP7 (AGC GAIN)**	**Process board**
Adjustment :	**VR2 (AGC GAIN)**	**Process board**

- Aim the camera at logarithmic gray scale chart.
- Connect the digital voltmeter to TP7 on the process board.
- Adjust VR2 (AGC GAIN) on the process board so that voltage at TP7 becomes 3.950 ± 0.05V.

(4) Pedestal Adjustment

Test points :	**Pin 1 of CN2**	**Power board**
	TP5 (WHD)	**Process board**
Adjustment :	**VR3 (PED LEVEL)**	**Process board**

- Cover the front of camera.
- Connect the oscilloscope to Pin 1 of CN2 on the Power board.
- Trigger the oscilloscope at H rate with TP5 on the process board.
- Adjust VR3 (PED LEVEL) on the process board so that pedestal level at Pin 1 of CN2 becomes 50 ± 10 mV.

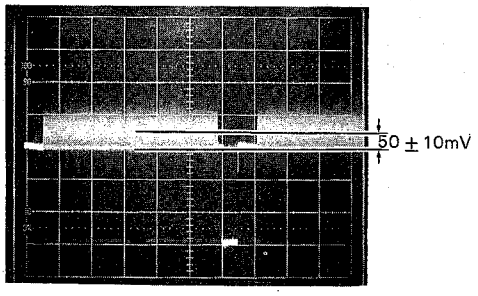


Fig. 4-2-4

(5) Video Output Level Adjustment

Test points :	**Pin 1 of CN2**	**Power board**
	TP5 (WHD)	**Process board**
Adjustment :	**VR4 (Y GAIN)**	**Process board**

- Aim the camera at logarithmic gray scale chart.
- Connect the oscilloscope to Pin 1 of CN2 on the Power board.
- Trigger the oscilloscope at H rate with TP5 on the process board.
- Adjust VR4 (Y GAIN) on the process board so that video level at Pin 1 of CN2 becomes 0.7 ± 0.03 V.

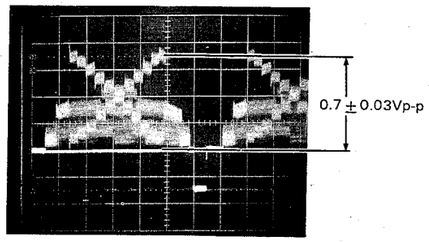


Fig. 4-2-5

(6) V-sub Fine Adjustment

Test point :	**—**	
Adjustment :	**VR1 (V-SUB)**	**Process board**

- Aim the camera at high bright object such as 40 watts lamp.
- While observing the picture on the monitor, adjust VR1 (V-SUB) on the process board so that blooming, smear and noise on the monitor becomes minimum.

4-3. Monitor Adjustment

- The camera must be completely aligned before monitor adjustment is made.
- Refer to Page 20 for the location of test points and adjusting controls.

(1) +8.5V Adjustment

Test point :	**TP1(8.5V)**	**Main board**
Adjustment :	**VR101 (8.5V ADJ)**	**Main board**

- Connect the digital voltmeter to TP1 on the main board.
- Adjust VR101 (8.5V ADJ) on the main board so that voltage at TP1 becomes +8.5 ± 0.05V.

(2) Camera Drive DC Current Adjustment

Test point :	**Camera Cable**	
Adjustment :	**VR201 (CURRENT ADJ)**	**Main board**

- Turn OFF the power of power supply unit.
- Connect the ampere meter between the camera and monitor as shown in Fig.4-3-1, and turn ON the power of power supply unit.
  Note ; Keep the power of power supply unit in the OFF position during the connection.
- Adjust VR201 (CURRENT ADJ) on the main board so that camera drive DC current becomes 200 ± 2mA.
- After the above adjustment, disconnect the ampere meter and reconnect the camera cable.

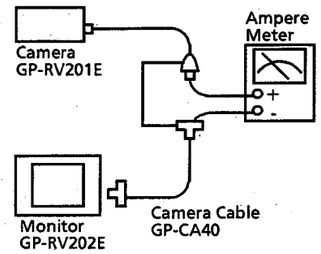


Fig. 4-3-1

(3) Picture Tilt Adjustment

Test point :	**—**	
Adjustment :	**Deflection Yoke**	**Deflection Yoke**

- Aim the camera at resolution chart.
- Loosen the screw which hold the deflection yoke assy.
- Turn the deflection yoke assy until the raster on the monitor screen becomes straight.
- Carefully tighten the screw which hold the deflection yoke assy.

(4) Vertical Height, Vertical Linearity, Horizontal Width and Centering Adjustment

Test point :	**—**	
Adjustment :	**Centering Magnets**	**Deflection Yoke**
	VR402(V.HEIGHT)	**Main board**
	VR403(V.LIN)	**Main board**
	L402(H.WIDTH)	**Main board**

- Set the controls on the main board(front panel) as follows.
  CONTRAST Control(VR301) :Mechanical center
  BRIGHT(Brightness) Control(VR302) : Mechanical center
- Aim the camera at ball/white set chart.
- Adjust the centering magnets until raster comes to the center of monitor screen.
- Adjust VR402(V.HEIGHT), VR403(V.LIN) and L402 (H.WIDTH) so that the circle of chart becomes nearly a true circle on the monitor.

(5) Sub-brightness Adjustment

Test point :	**—**	
Adjustment :	**VR303(SUB-BRIGHT)**	**CRT Socket board**

- Set the controls on the main board(front panel) as follows.
  CONTRAST Control(VR301) : Fully counter clockwise
  BRIGHT(Brightness) Control(VR302) : Mechanical center
- Adjust VR303(SUB-BRIGHT) on the CRT socket board so that raster on the monitor just disappeared.

(6) Vertical and Horizontal Hold Adjustment

Test point :	**Pin 2 of CN5(Vertical)**	**Main board**
	Pin 1 of CN4(Horizontal)	**Main board**
Adjustment :	**VR401(V.HOLD)**	**Main board**
	VR404(H.HOLD)	**Main board**
M. Equipment :	**Frequency Counter**	

- Disconnect the camera cable from the camera cable connector on the rear panel.
- Set the controls on the main board(front panel) as follows.
  CONTRAST Control(VR301) : Mechanical center
  BRIGHT(Brightness) Control(VR302) : Mechanical center
- Connect the frequency counter to Pin 2 of CN5(Vertical) on the main board.
- Adjust VR401(V-HOLD) on the main board so that frequency at Pin 2 of CN5 becomes 44Hz ± 0.5Hz.
- Connect the frequency counter to Pin 1 of CN4(Horizontal) on the main board.
- Adjust VR404(H-HOLD) on the main board so that frequency at Pin 1 of CN4 becomes 15.250kHz ± 100Hz.
- Connect the camera cable to camera cable connector on the rear panel.
- Aim the camera at resolution chart and confirm that picture of camera is properly displayed on the monitor.

(7) Focus Adjustment

Test point :	**—**	
Adjustment :	**VR304(FOCUS)**	**CRT socket board**
M. Equipment :	**—**	

- Aim the camera at resolution chart.
- Adjust VR304(FOCUS) on the CRT socket board so that picture on the monitor screen becomes best focus.

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) **Main board**

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ble.

Ampere Meter

Cable
)

Deflection Yoke

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nold the deflection

(4) Vertical Height, Vertical Linearity, Horizontal Width and Centering Adjustment

Test point : —
Adjustment : **Centering Magnets** **Deflection Yoke**
VR402(V.HEIGHT) **Main board**
VR403(V.LIN) **Main board**
L402(H.WIDTH) **Main board**

- Set the controls on the main board(front panel) as follows.
  CONTRAST Control(VR301) :Mechanical center
  BRIGHT(Brightness) Control(VR302) : Mechanical center
- Aim the camera at ball/white set chart.
- Adjust the centering magnets until raster comes to the center of monitor screen.
- Adjust VR402(V.HEIGHT), VR403(V.LIN) and L402 (H.WIDTH) so that the circle of chart becomes nearly a true circle on the monitor.

(5) Sub-brightness Adjustment

Test point : —
Adjustment : **VR303(SUB-BRIGHT)** **CRT Socket board**

- Set the controls on the main board(front panel) as follows.
  CONTRAST Control(VR301) : Fully counter clockwise
  BRIGHT(Brightness) Control(VR302) : Mechanical center
- Adjust VR303(SUB-BRIGHT) on the CRT socket board so that raster on the monitor just disappeared.

(6) Vertical and Horizontal Hold Adjustment

Test point : **Pin 2 of CN5(Vertical)** **Main board**
Pin 1 of CN4(Horizontal) **Main board**
Adjustment : **VR401(V.HOLD)** **Main board**
VR404(H.HOLD) **Main board**
M. Equipment :Frequency Counter

- Disconnect the camera cable from the camera cable connector on the rear panel.
- Set the controls on the main board(front panel) as follows.
  CONTRAST Control(VR301) : Mechanical center
  BRIGHT(Brightness) Control(VR302) : Mechanical center
- Connect the frequency counter to Pin 2 of CN5(Vertical) on the main board.
- Adjust VR401(V-HOLD) on the main board so that frequency at Pin 2 of CN5 becomes 44Hz ± 0.5Hz.
- Connect the frequency counter to Pin 1 of CN4(Horizontal) on the main board.
- Adjust VR404(H-HOLD) on the main board so that frequency at Pin 1 of CN4 becomes 15.250kHz ± 100Hz.
- Connect the camera cable to camera cable connector on the rear panel.
- Aim the camera at resolution chart and confirm that picture of camera is properly displayed on the monitor.

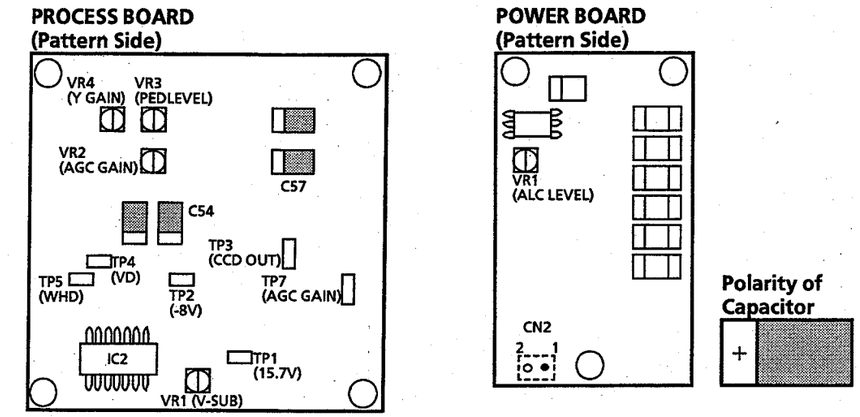
(7) Focus Adjustment

Test point : —
Adjustment : **VR304(FOCUS)** **CRT socket board**
M. Equipment :—

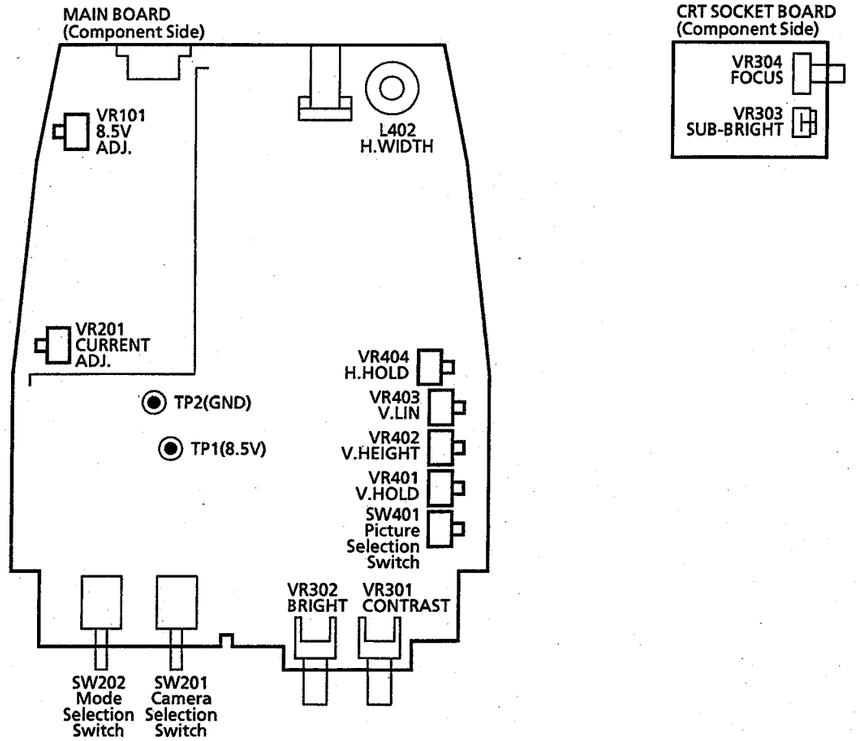
- Aim the camera at resolution chart.
- Adjust VR304(FOCUS) on the CRT socket board so that picture on the monitor screen becomes best focus.

LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

GP-RV201E



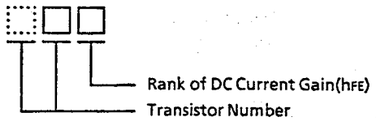
GP-RV202E



CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.



Transistor Number

(Chip Transistor)

Letter	Transister No.	Letter	Transister No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD814	1M	2SJ84
Q	2SD813	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116
BQ	2SB766A	UMT	2SC4081

(Small Chip Transistor)

Letter	Transister No.
A	2SB1218
U	2SC3931
W	2SD1820
Y	2SD1819
E3	2SA1226
OS	2SB1219
UC	2SA1532
YU	2SC3938

(Pair Transistor)

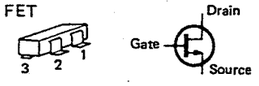
Letter	Transister No.
5C	XN4601
5N	XN6501
5O	XN6401
5H	XP4501
5C	XP4601

Example : WQ ⟶ 2SD602 - Q
YQ ⟶ 2SD601 - Q
1BS ⟶ 2SB814 - S

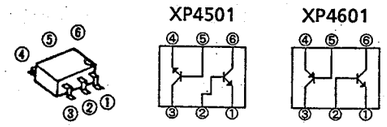
Appearance and Symbols

Transistor

FET

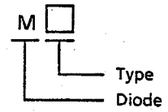


	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source



2. Chip Diode

The diode number is indicated on the top surface of the cl diode using Two alphabet letters.



Diode Number

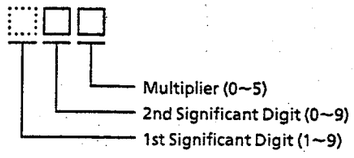
Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK
MH	MA141K	6.2	MA3062
MC	MA143	SMD	RB421D

Appearance and Symbols

	1	2	3
MA28/MA28W/MA28T	-	Anode	Cathode
MA151K/MA152K	-	Anode	Cathode
MA151A/MA152A	-	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	-	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	-	Cathode
RB421D	Anode	-	Cathode

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



Example : 330 ⟶ $33 \times 10^0 = 33$ ohms
561 ⟶ $56 \times 10^1 = 560$ ohms
123 ⟶ $12 \times 10^3 = 12$ ohms

Note : Zero ohm resistor (jumper chip) is colored red or green.

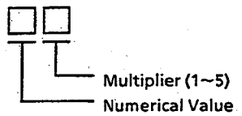
4. Chip Capacitor

The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example :
0.5 ⟶ 0.5 pF
75 ⟶ 0.75 pF
1 ⟶ 1 pF
2.5 ⟶ 2.5 pF
33 ⟶ 33 pF
82 ⟶ 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	O	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

*Letters I and O are not used

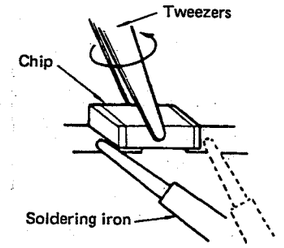
Example : A1 ⟶ $10 \times 10^1 = 100$ pF
N2 ⟶ $33 \times 10^2 = 3300$ pF
S3 ⟶ $47 \times 10^3 = 47000$ pF

5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 seconds.
9. Maintain temperature control under 260°C (500°F) when soldering.

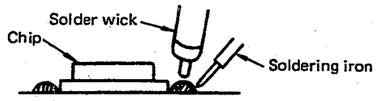
5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers.
   Note : Be careful not to damage other chips.

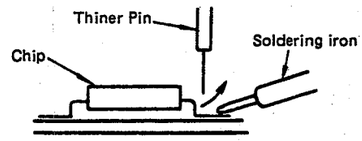


5-2 Removal (IC)

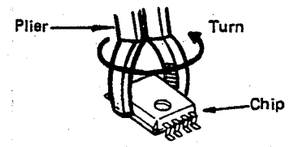
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and left each lead of the IC using thiner pin.

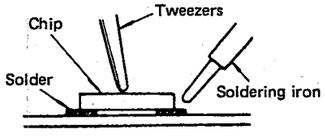


3. Remove IC turning it with plier.

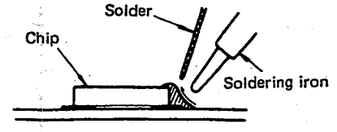


5-3 Mounting

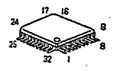
1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.



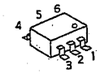
3. Solder both ends of chip (three leads for chip transistor).



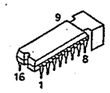
YWCXA1310AC



XP4501
XP4601

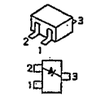


YWUPC1379C

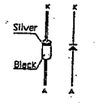


2SC1568-RST
2SB1151-LM

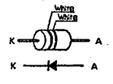
MA141K
YWRB421D



ES01F



MA185



4. Chip Capacitor

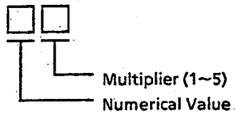
The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example :

0.5	0.5 pF	2.5	2.5 pF
75	0.75 pF	33	33 pF
1	1 pF	82	82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	O	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

*Letters I and O are not used

Example :

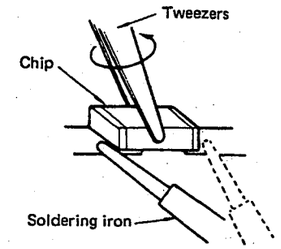
A1	⟶	$10 \times 10^1 = 100$ pF
N2	⟶	$33 \times 10^2 = 3300$ pF
S3	⟶	$47 \times 10^3 = 47000$ pF

5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 seconds.
9. Maintain temperature control under 260°C (500°F) when soldering.

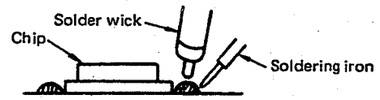
5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers.
   Note : Be careful not to damage other chips.

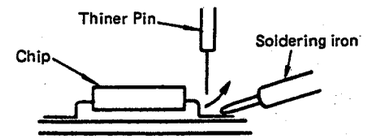


5-2 Removal (IC)

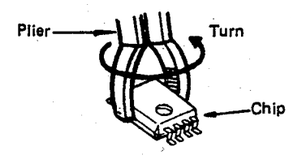
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and left each lead of the IC using thiner pin.

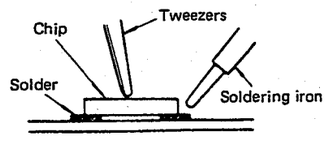


3. Remove IC turning it with plier.

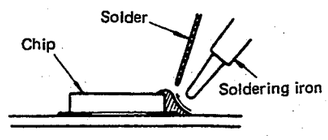


5-3 Mounting

1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.

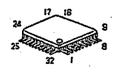


3. Solder both ends of chip (three leads for chip transistor).

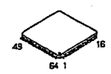


APPEARANCE OF IC, TRANSISTOR AND DIODE

YWCXA1310AQ



MN5168



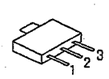
YWNJM3416
YWLM358DB
YWNJM3416

YWTC7S04F

YWUPD16501GS
YWMC74HC242F

XP4501
XP4601

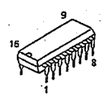
YW78L05UATE2



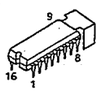
YWHD1407BP

NJM2360D
NJM4558D

NJM3524D

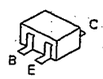


YWUPC1379C

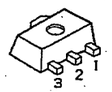


2SA1462
2SB709-Q
2SC2404-CD
2SC3735

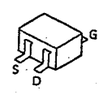
2SC4081
2SD601-RS
2SD601A-QR
2SD1819-QRS



2SB766A-QR



2SK662-PQR



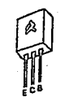
2SC1568-RST
2SB1151-LM

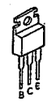
2SB941-PQ
2SB946-PQ
2SD1274B

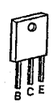
2SC1567-RS

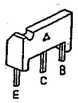
2SC2258

2SB641-QRS
2SD636-QRS









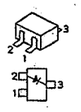
MA141K
YWRB421D

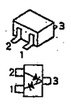
MA143
MA153

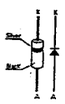
EK14
EM01Z

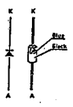
YWERB84009

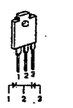
ESAB82M004











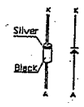
ES01F

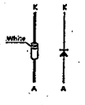
MA165

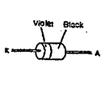
YWRU4AM

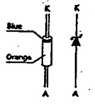
YWUZ8.2BSA

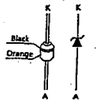
YWUZ9.1BSC





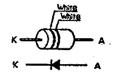




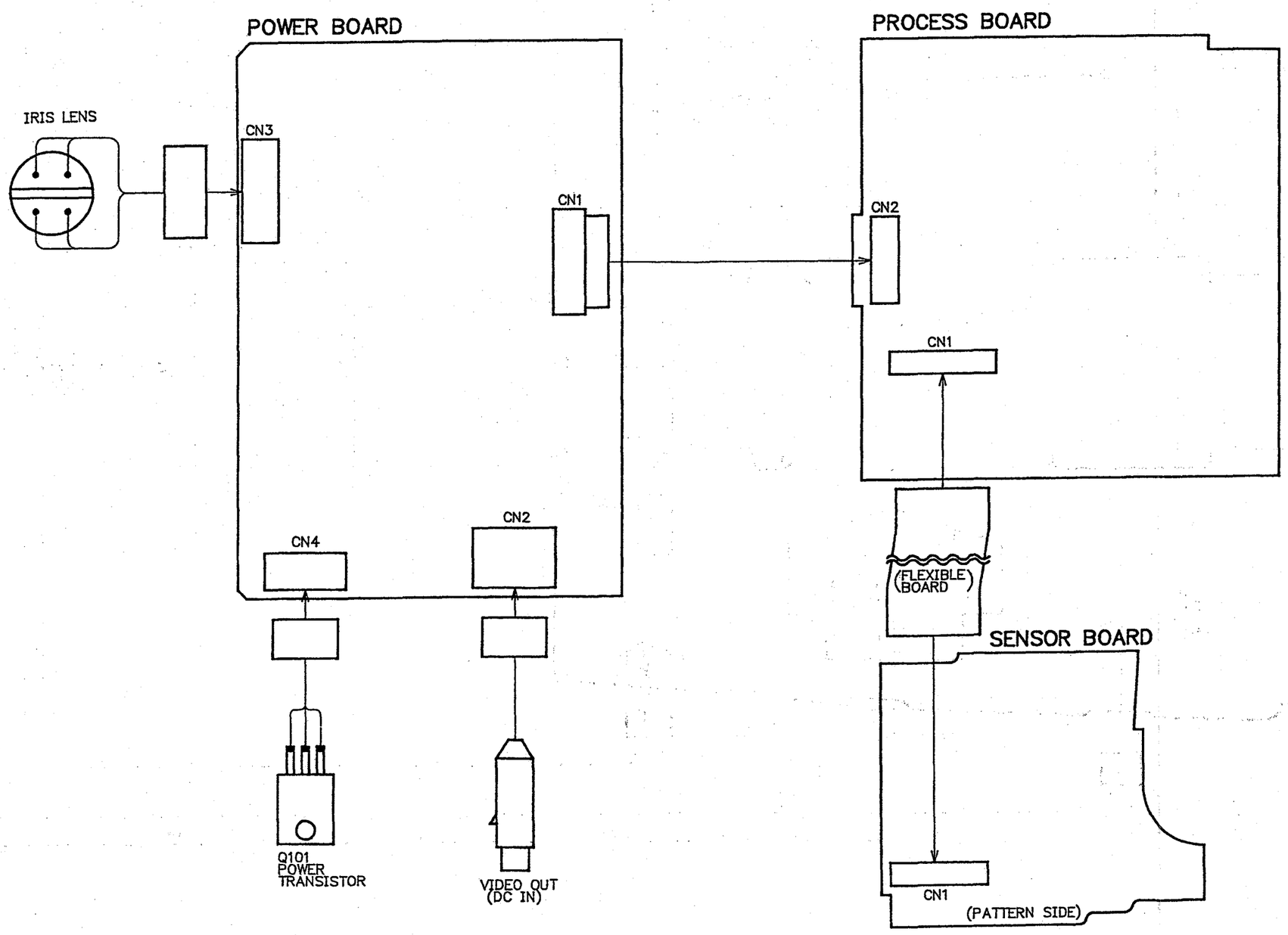


MA185

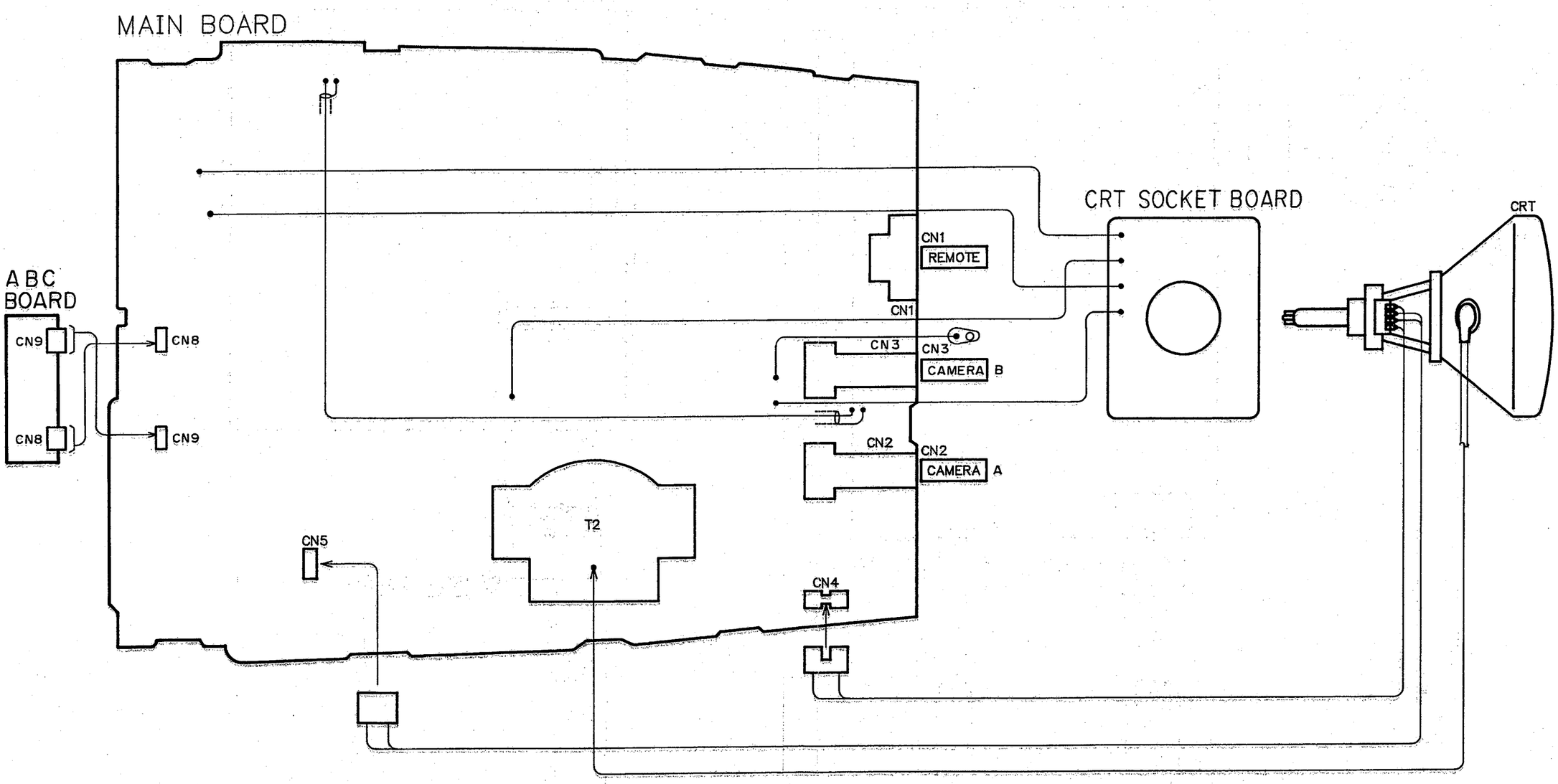
LN11WP34



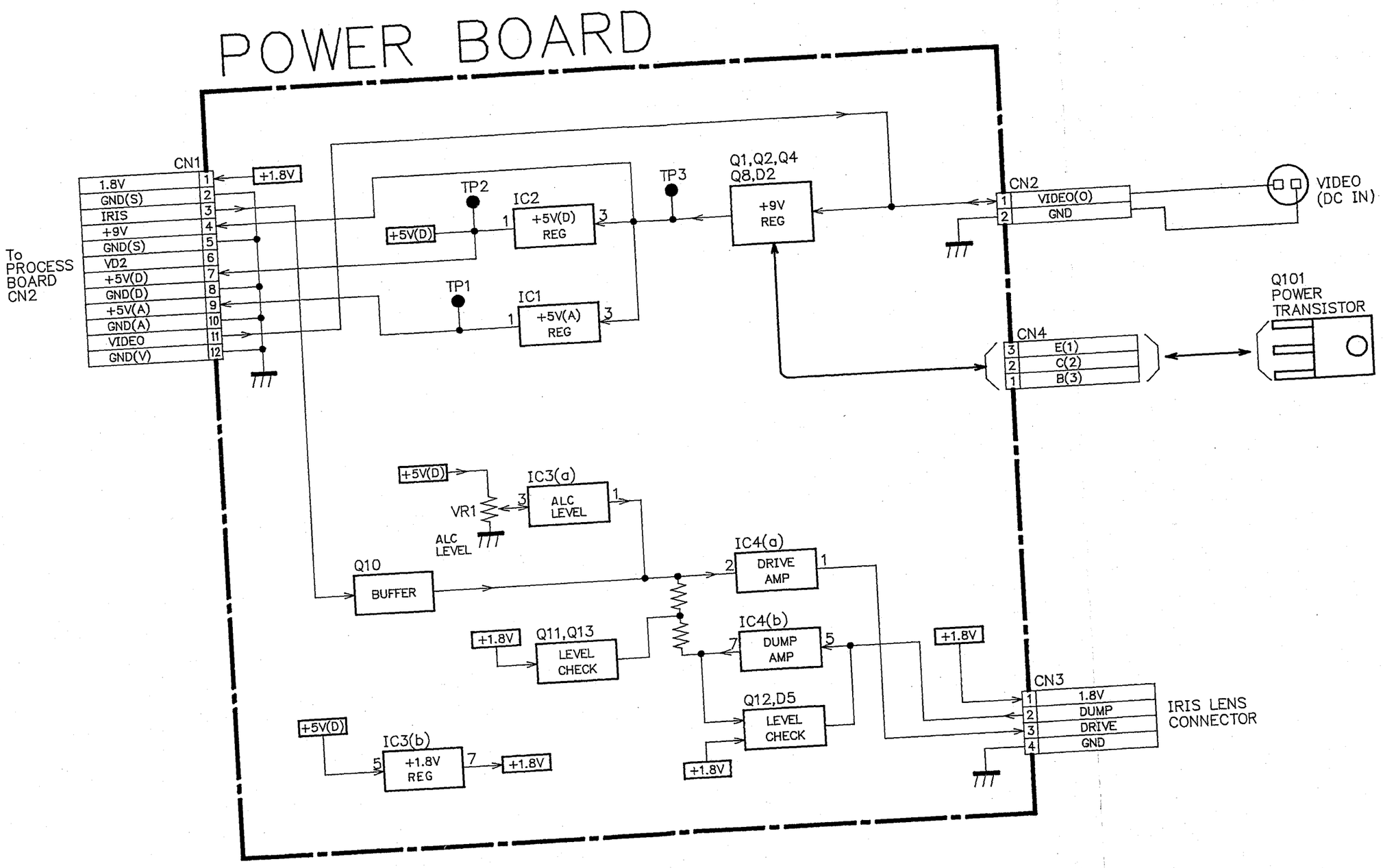
WIRING DIAGRAM OF GP-RV201E



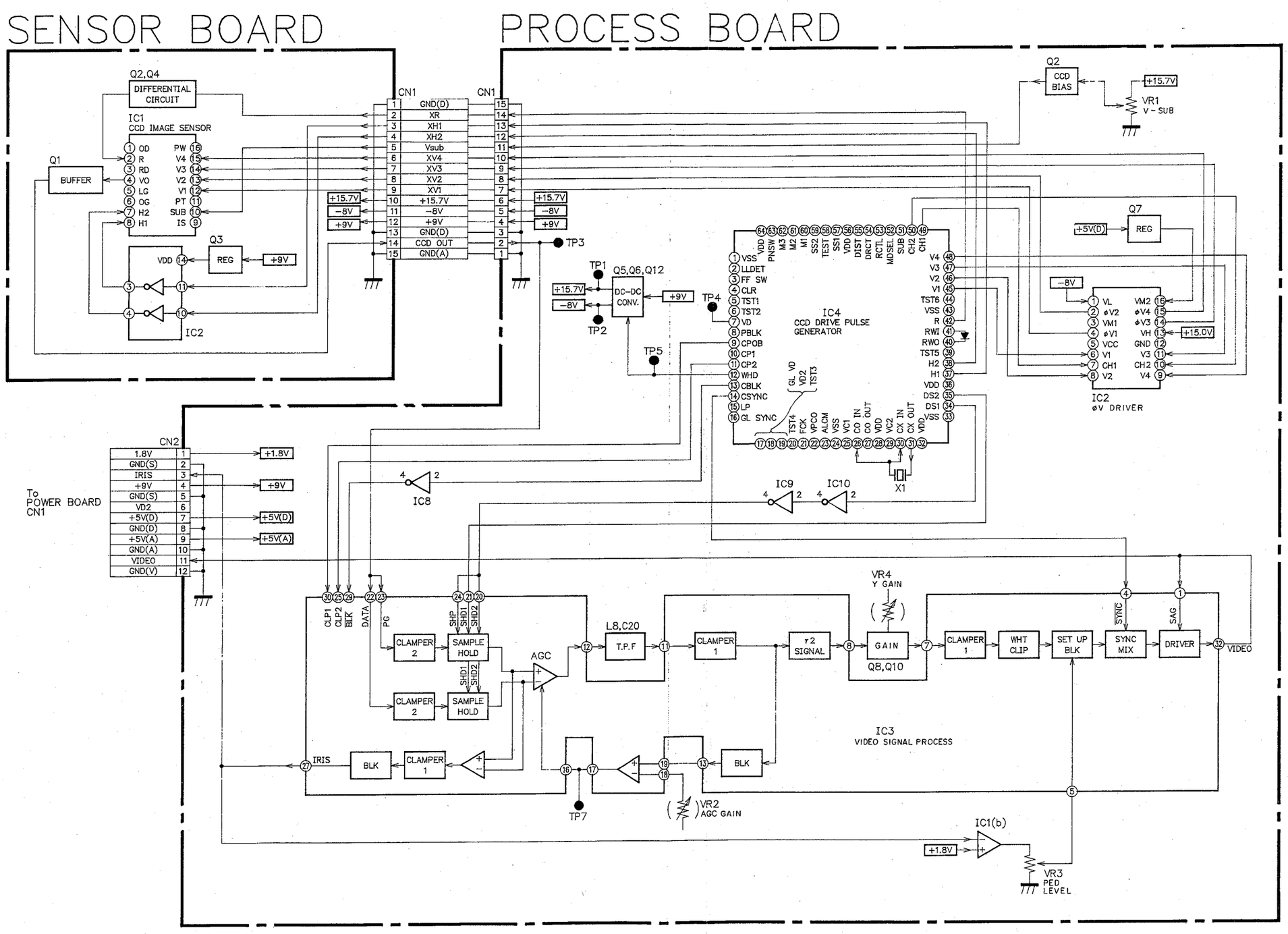
WIRING DIAGRAM OF GP-RV202E



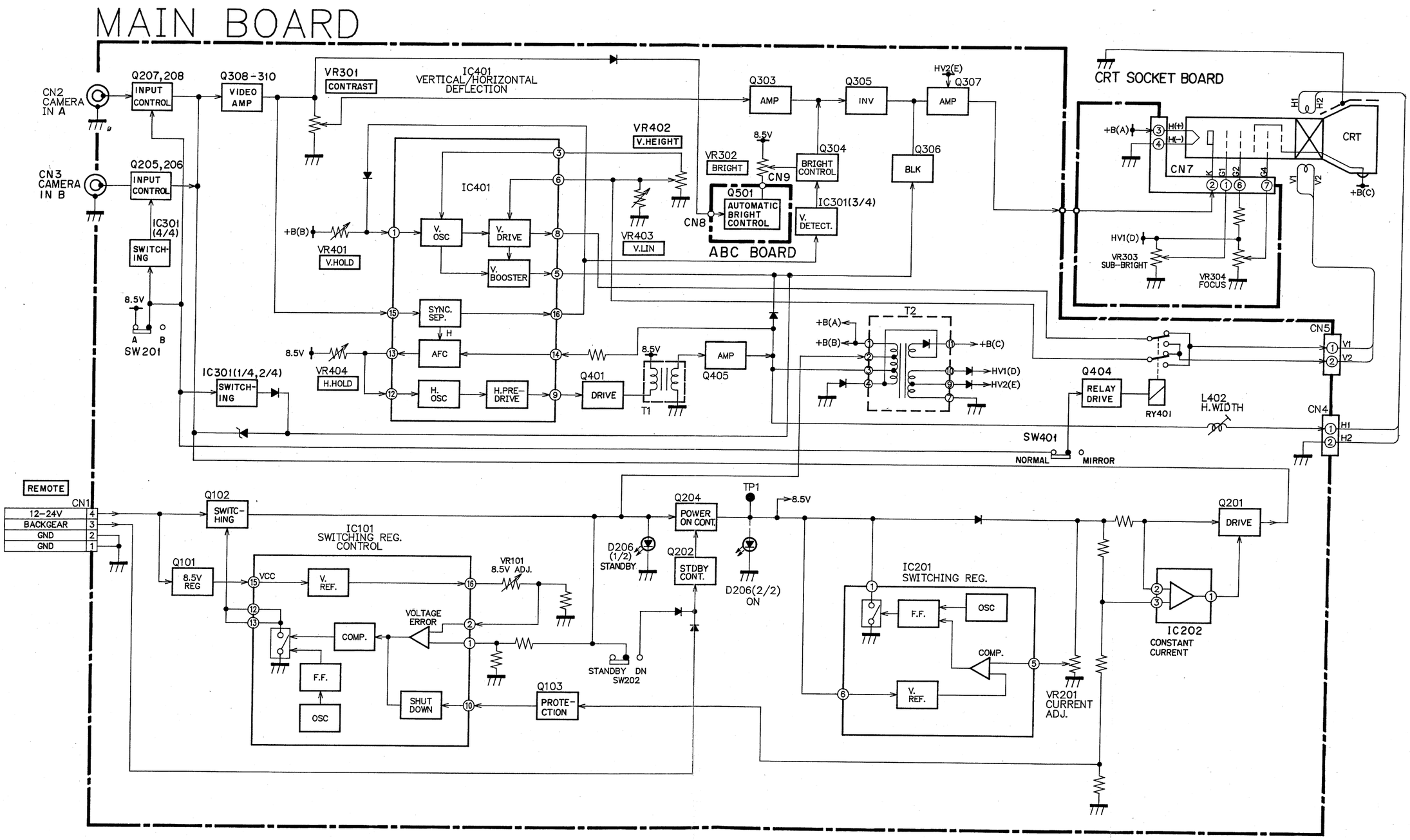
BLOCK DIAGRAM OF POWER BOARD



BLOCK DIAGRAM OF SENSOR/PROCESS BOARD



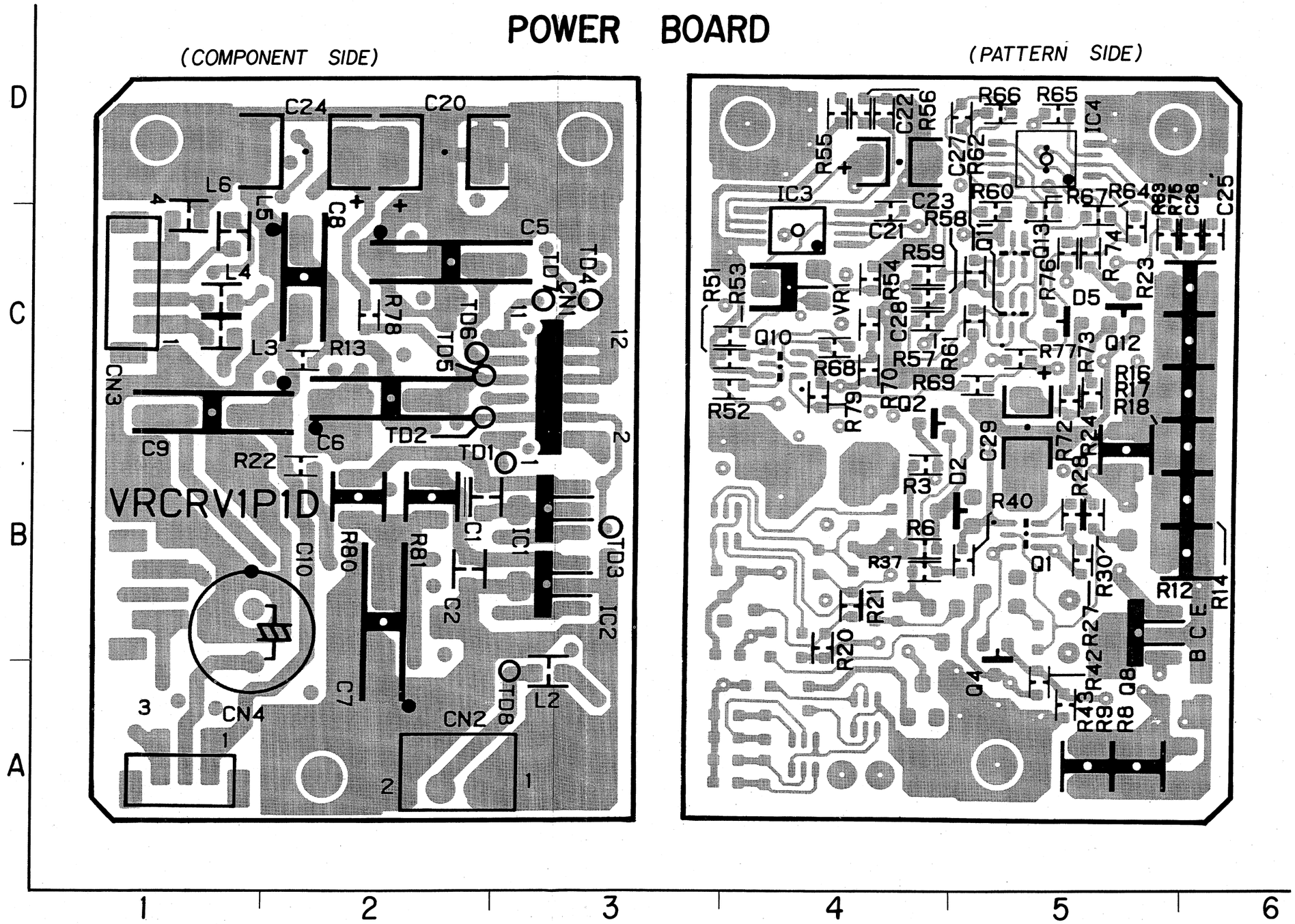
BLOCK DIAGRAM OF MAIN /CRT SOCKET BOARD



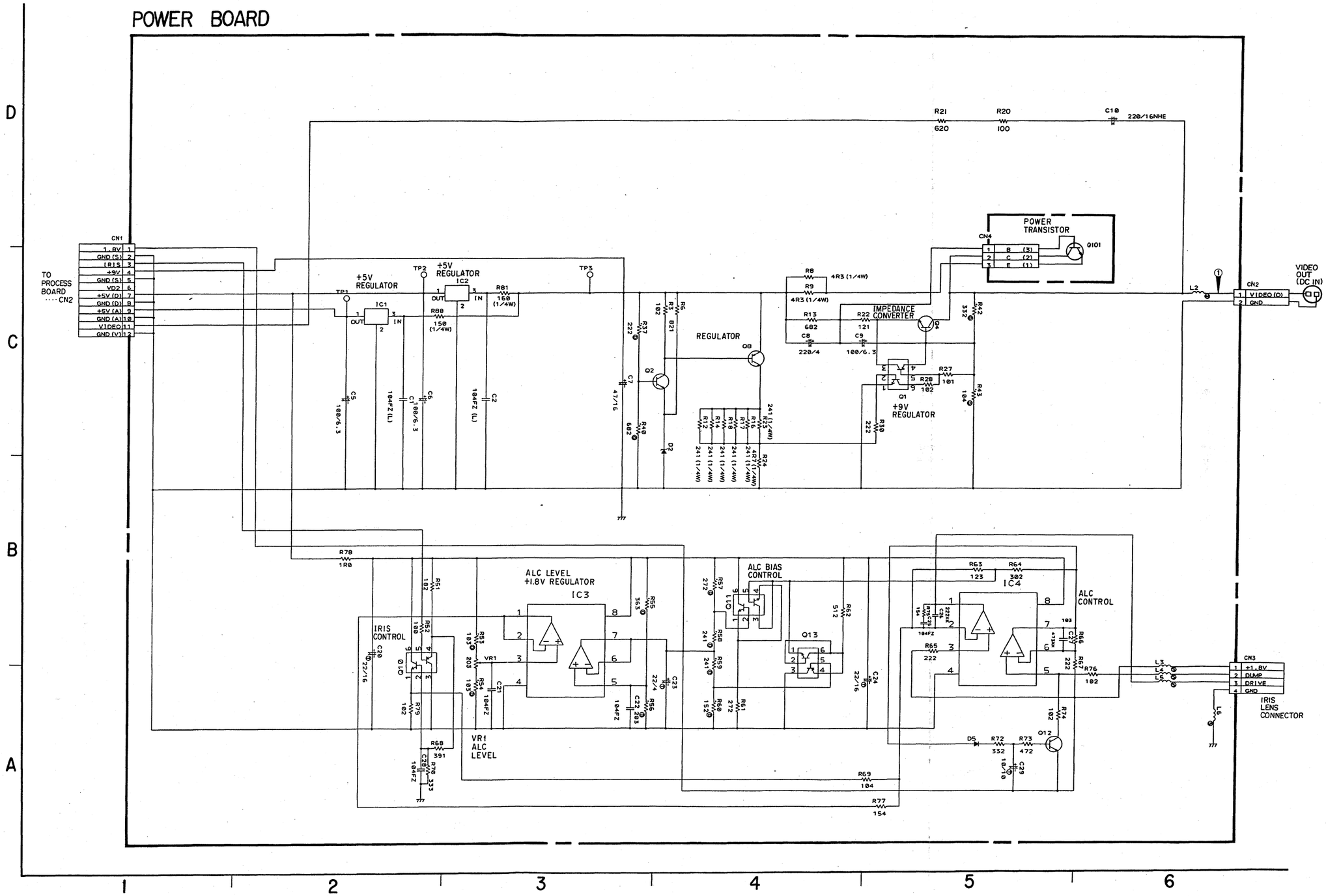
CONDUCTOR VIEW OF POWER BOARD

<Index>

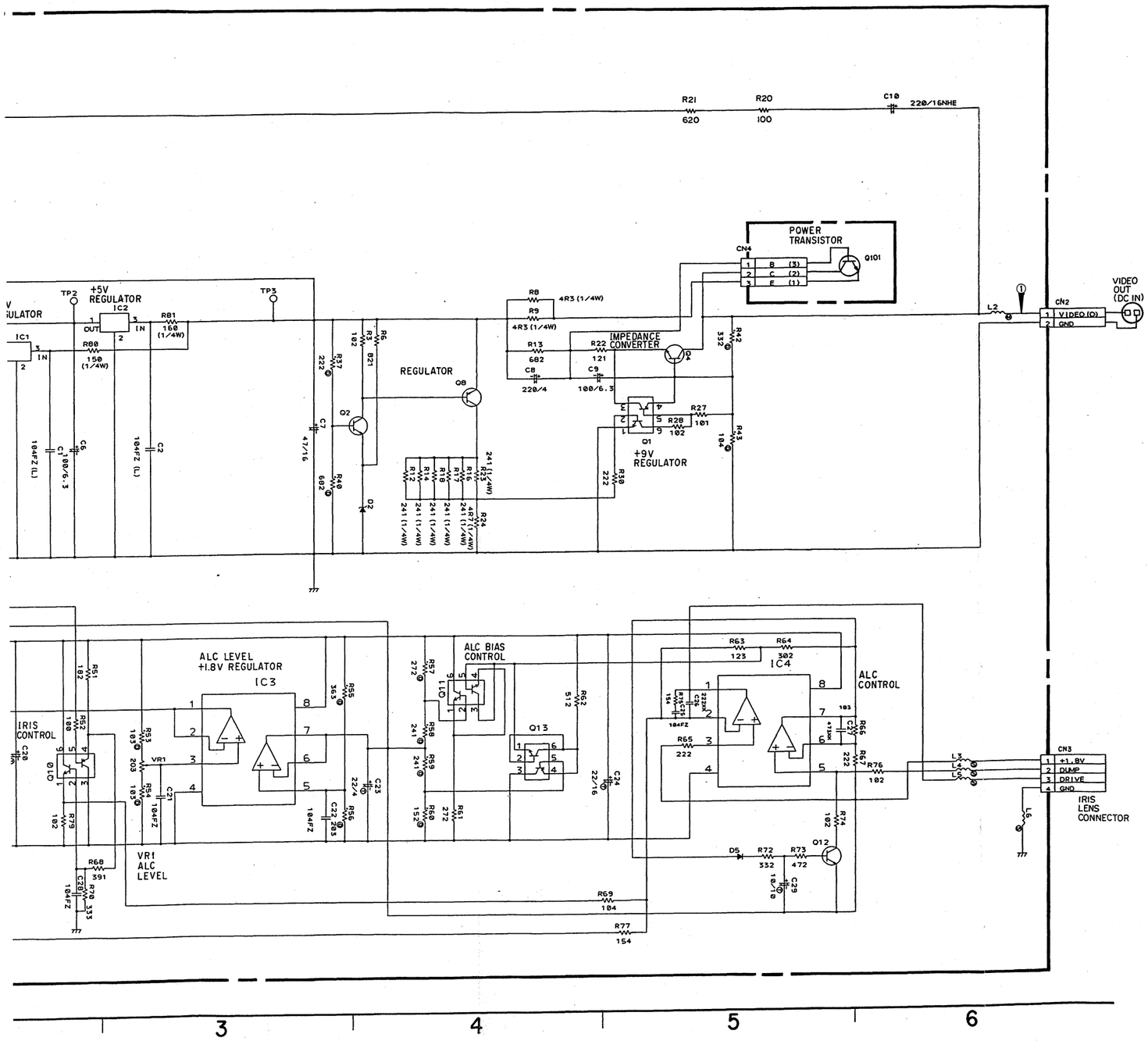
POWER BOARD	
IC1	B3
IC2	B3
IC3	C4
IC4	D5
Q1	B5
Q2	C4
Q4	A5
Q8	B5
Q10	C4
Q11	C5
Q12	C5
Q13	C5
D2	B5
D5	C5



SCHEMATIC DIAGRAM OF POWER BOARD



SCHEMATIC DIAGRAM OF POWER BOARD



POWER BOARD

	IC1	IC2	IC3	IC4
Pin 1	4.9	4.9	2.3	1.7
2	0	0	2.3	0.5
3	8.0	8.0	2.3	1.7
4			0	0
5			1.6	1.7
6			1.6	1.7
7			1.6	1.7
8			4.9	4.9

	Q1	Q10	Q11	Q13
Pin 1	0	1.4	1.4	2.1
2	0.2	2.0	2.0	1.5
3	10.2	0	1.7	2.1
4	10.8	2.0	1.4	1.8
5	10.8	1.4	1.7	2.1
6	10.8	4.8	4.8	0

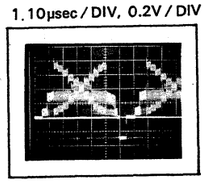
	B	C	E
Q2	6.7	8.2	6.1
8	8.3	1.8	9.0
12	1.6	1.8	1.8

<Index>

POWER BOARD

IC1	C2
IC2	C3
IC3	B3
IC4	B5
Q1	C5
Q2	C4
Q4	C5
Q8	C4
Q10	A2
Q11	B4
Q12	A5
Q13	A4
D2	C4
D5	A5

1.10µsec / DIV, 0.2V / DIV



Note: The value indicated in schematic diagram should be read as follows:

□ □ □
- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

330 → 33×10^0 = 33Ω
561 → 56×10^1 = 560Ω
123 → 12×10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:

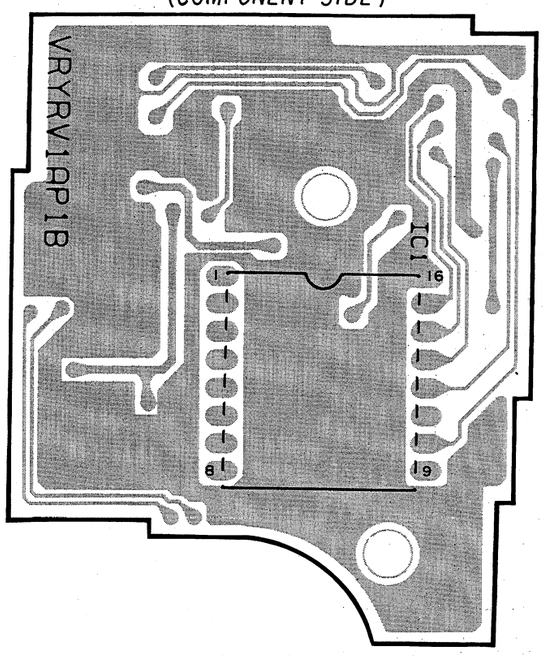
820 → 82×10^0 = 82pF
102 → 10×10^2 = 1000pF = 0.001µF
104 → 10×10^4 = 100000pF = 0.1µF

The suffix attached to capacitance indicates a type of capacitor.

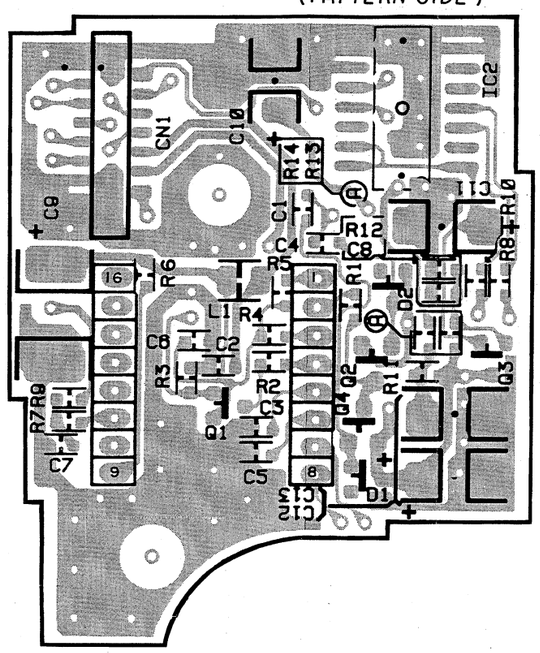
CONDUCTOR VIEW OF PROCESS/SENSOR BOARD

SENSOR BOARD

(COMPONENT SIDE)

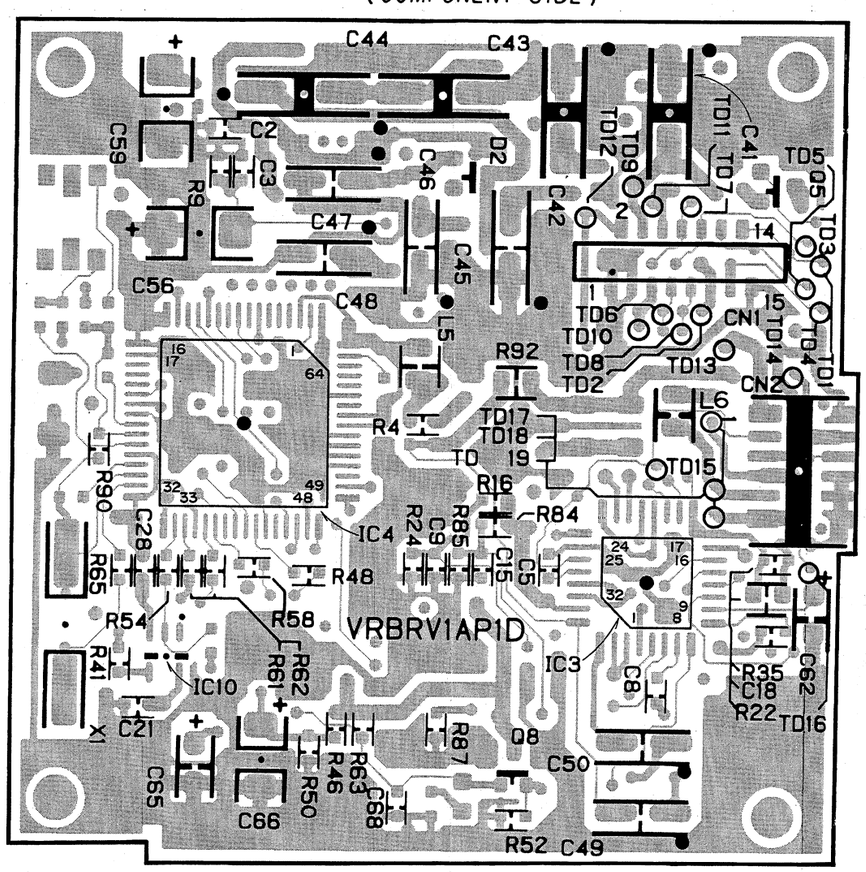


(PATTERN SIDE)



PROCESS BOARD

(COMPONENT SIDE)



A B C

1 2 3 4 5

<Index>

SENSOR BOARD

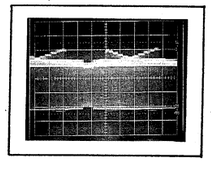
IC1	B1
IC2	C3
Q1	B2
Q2	B2
Q3	B3
Q4	B2
D1	B2
D2	B2

<Index>

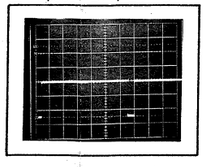
PROCESS BOARD

IC1	A5
IC2	C6
IC3	B4
IC4	B3
IC8	B6
IC9	A6
IC10	A3
Q2	C6
Q5	C4
Q6	C5
Q7	C6
Q8	A4
Q10	A6
Q12	C5
D1	C5
D2	C4
D3	C6
D5	C5
D6	C5
D7	C6
D8	B6
D11	C5
D12	A5

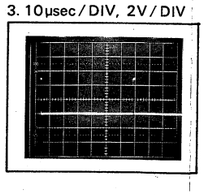
1. 10µsec / DIV, 0.2V / DIV



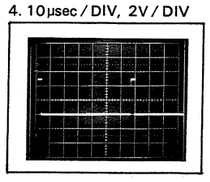
2. 10µsec / DIV, 2V / DIV



3. 10µsec / DIV, 2V / DIV



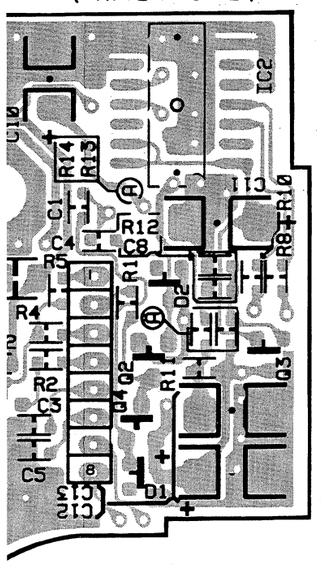
4. 10µsec / DIV, 2V / DIV



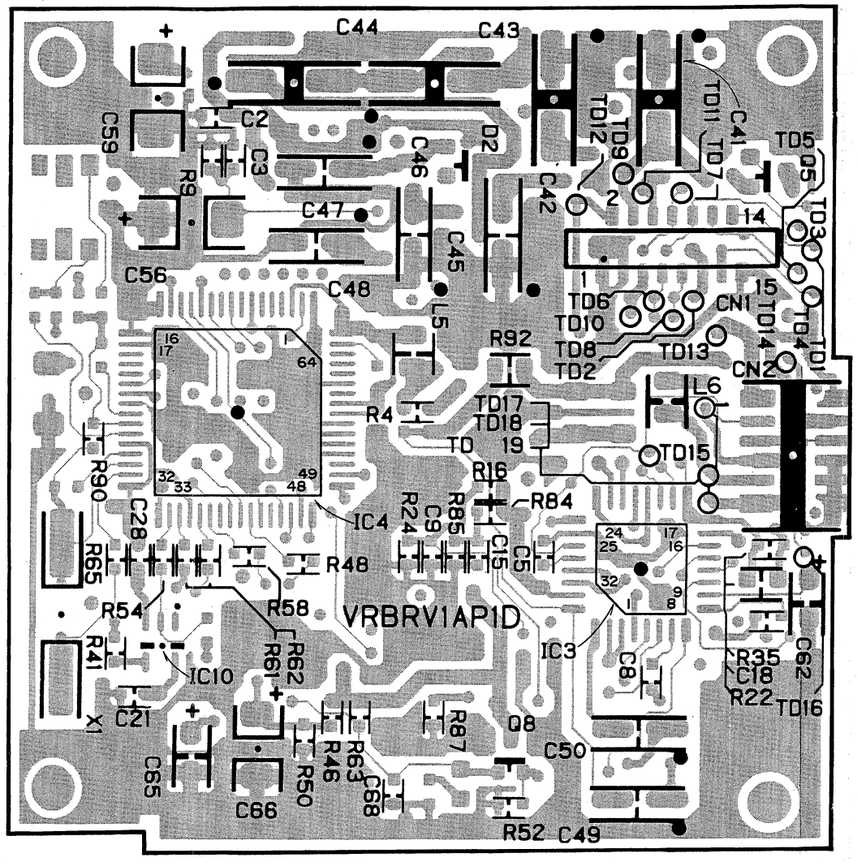
CONDUCTOR VIEW OF PROCESS/SENSOR BOARD

PROCESS BOARD

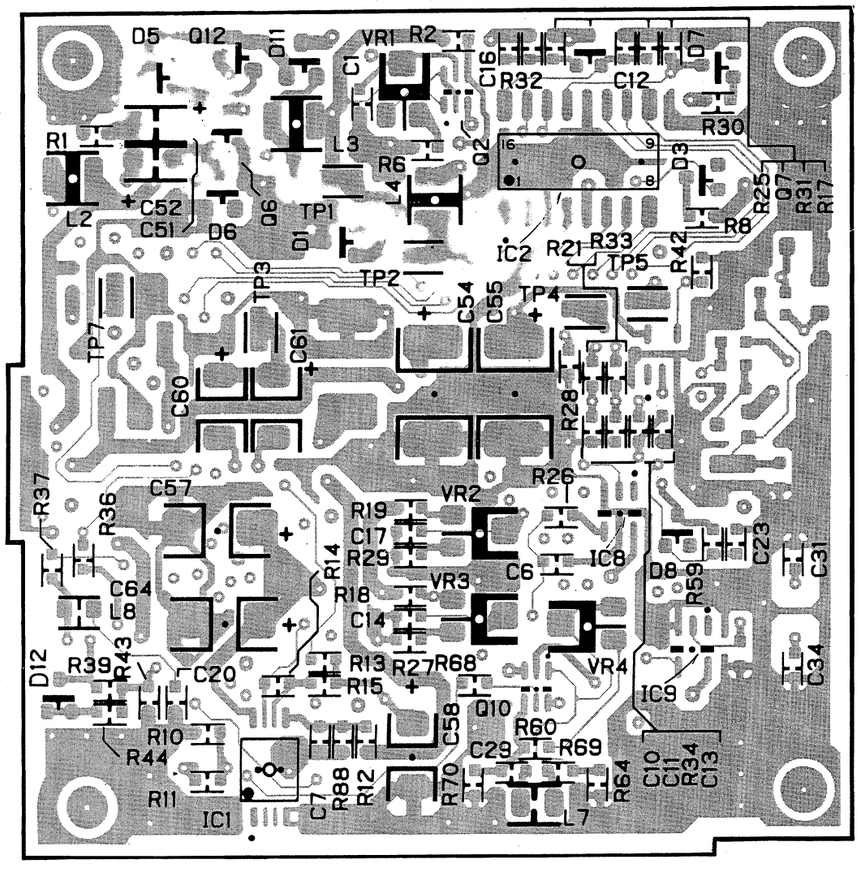
(PATTERN SIDE)



(COMPONENT SIDE)



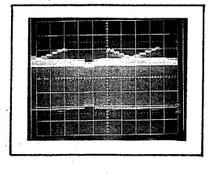
(PATTERN SIDE)



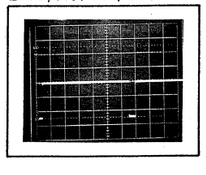
3 4 5 6

D1	C5
D2	C4
D3	C6
D5	C5
D6	C5
D7	C6
D8	B6
D11	C5
D12	A5

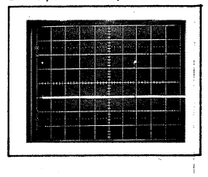
1. 10µsec / DIV, 0.2V / DIV



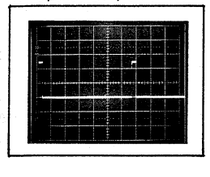
2. 10µsec / DIV, 2V / DIV



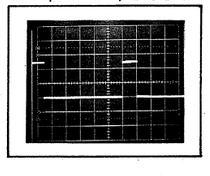
3. 10µsec / DIV, 2V / DIV



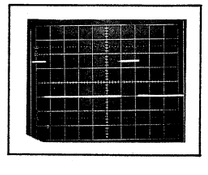
4. 10µsec / DIV, 2V / DIV



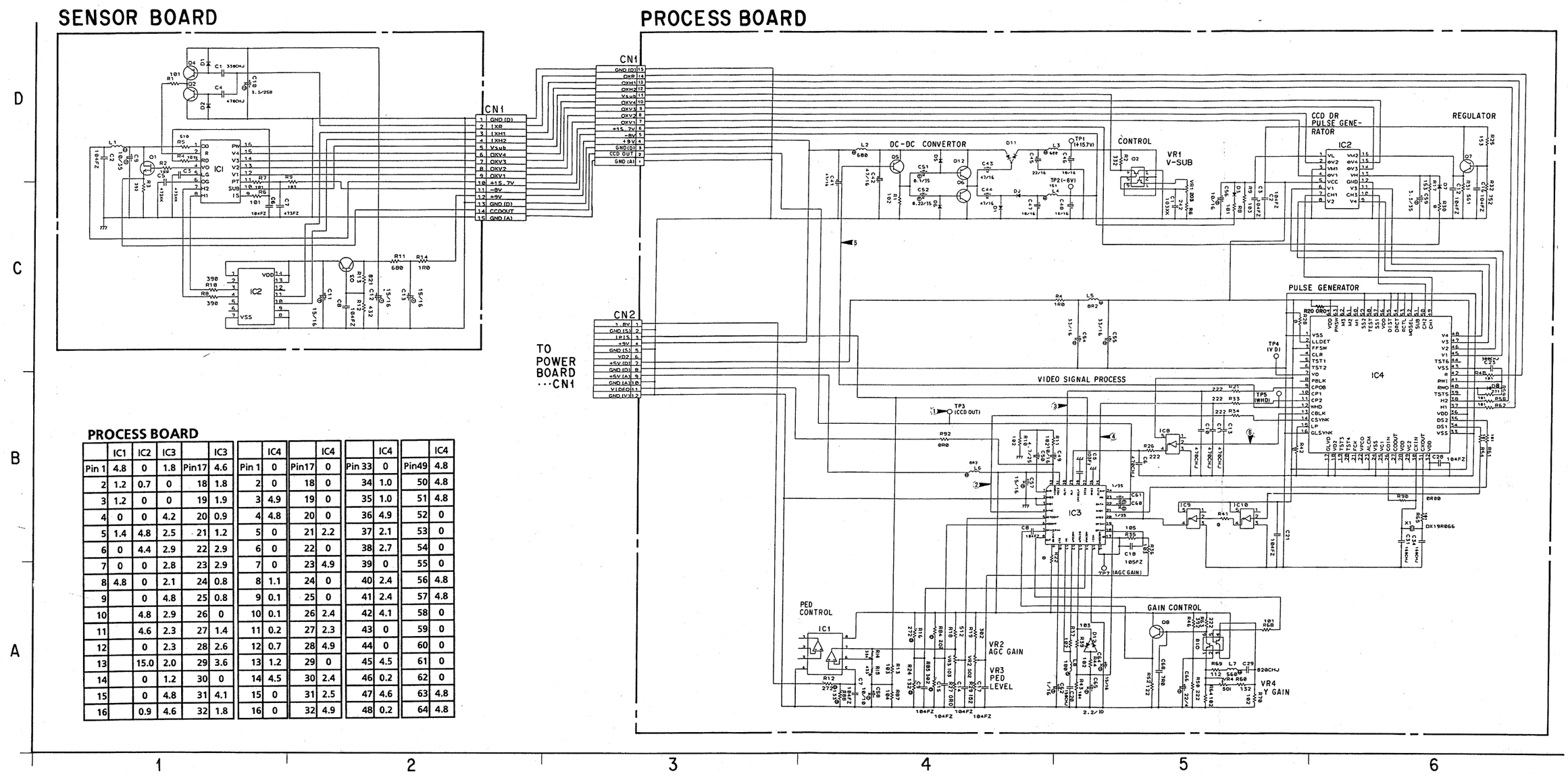
5. 10µsec / DIV, 2V / DIV



6. 10µsec / DIV, 2V / DIV



SCHEMATIC DIAGRAM OF SENSOR/PROCESS BOARD



PROCESS BOARD

	IC1	IC2	IC3		IC3		IC4		IC4		IC4		IC4
Pin 1	4.8	0	1.8	Pin17	4.6	Pin 1	0	Pin17	0	Pin 33	0	Pin49	4.8
2	1.2	0.7	0	18	1.8	2	0	18	0	34	1.0	50	4.8
3	1.2	0	0	19	1.9	3	4.9	19	0	35	1.0	51	4.8
4	0	0	4.2	20	0.9	4	4.8	20	0	36	4.9	52	0
5	1.4	4.8	2.5	21	1.2	5	0	21	2.2	37	2.1	53	0
6	0	4.4	2.9	22	2.9	6	0	22	0	38	2.7	54	0
7	0	0	2.8	23	2.9	7	0	23	4.9	39	0	55	0
8	4.8	0	2.1	24	0.8	8	1.1	24	0	40	2.4	56	4.8
9		0	4.8	25	0.8	9	0.1	25	0	41	2.4	57	4.8
10		4.8	2.9	26	0	10	0.1	26	2.4	42	4.1	58	0
11		4.6	2.3	27	1.4	11	0.2	27	2.3	43	0	59	0
12		0	2.3	28	2.6	12	0.7	28	4.9	44	0	60	0
13		15.0	2.0	29	3.6	13	1.2	29	0	45	4.5	61	0
14		0	1.2	30	0	14	4.5	30	2.4	46	0.2	62	0
15		0	4.8	31	4.1	15	0	31	2.5	47	4.6	63	4.8
16		0.9	4.6	32	1.8	16	0	32	4.9	48	0.2	64	4.8

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SENSOR BOARD

IC1	D1	D1	D1
IC2	C1	D2	D1
Q1	D1		
Q2	D1		
Q3	C2		
Q4	D1		

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PROCESS BOARD

IC1	A4	Q2	D5	D1	C4
IC2	D6	Q5	D4	D2	C4
IC3	B5	Q6	C4	D3	C5
IC4	B6	Q7	D6	D5	D4
IC8	B5	Q8	A5	D6	C4
IC9	B5	Q10	A5	D7	C6
IC10	B5	Q12	D4	D8	B6
				D11	D4
				D12	A5

Note: The value indicated in schematic diagram should be read as follows:

- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginifical Digit (1 - 9)

<Example>

For Resistor:

- 330 → 33 x 10^0 = 33Ω
- 561 → 56 x 10^1 = 560Ω
- 123 → 12 x 10^3 = 12kΩ
- 0R00 = 0 Ω

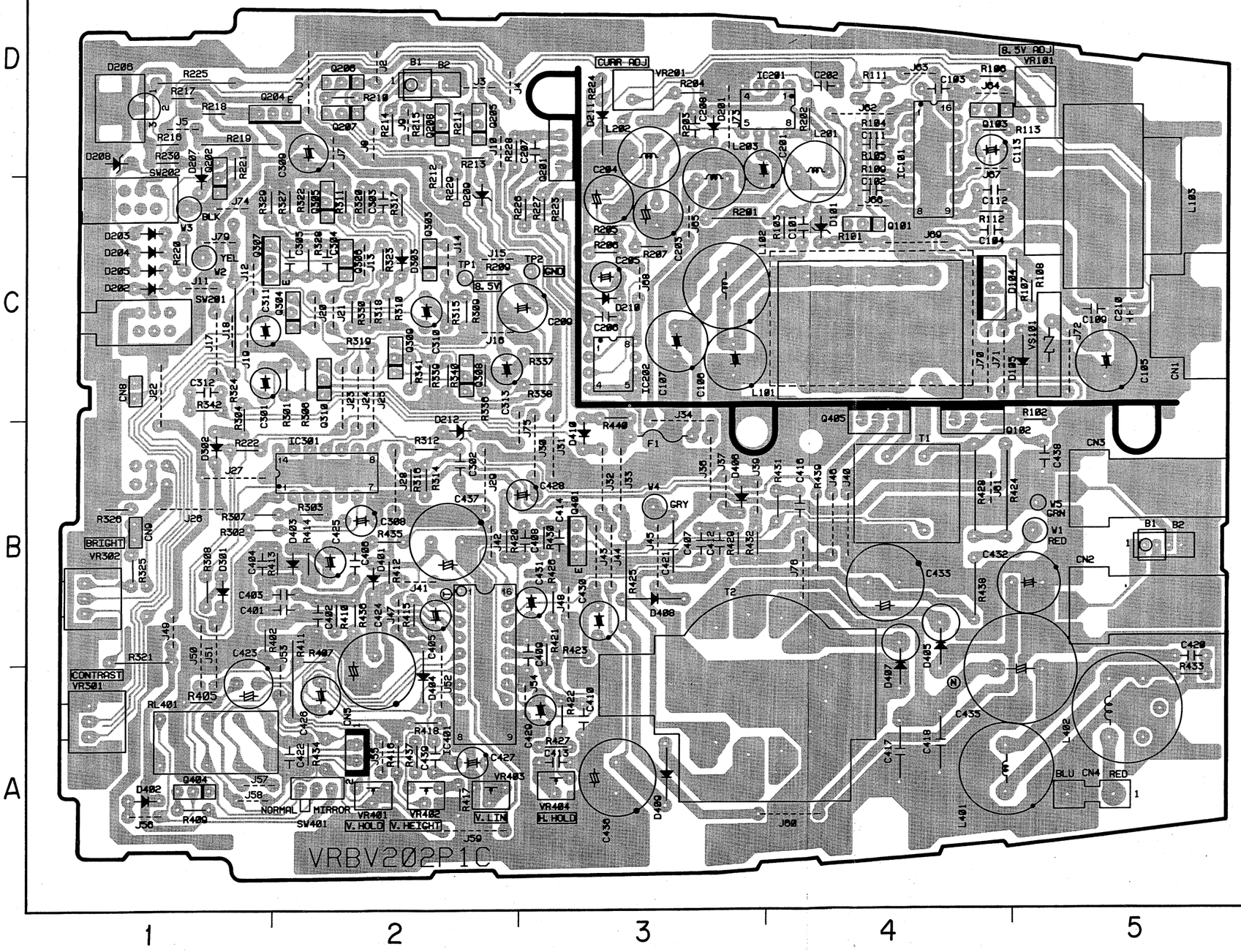
For Capacitor:

- 820 → 82 x 10^0 = 82pF
- 102 → 10 x 10^2 = 1000pF = 0.001μF
- 104 → 10 x 10^4 = 100000pF = 0.1μF

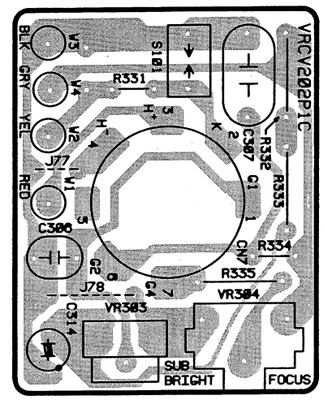
The suffix attached to capacitance indicates a type of capacitor.

CONDUCTOR VIEW OF MAIN/CRT SOCKET BOARD

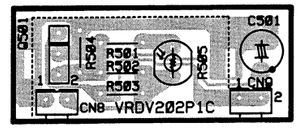
MAIN BOARD (COMPONENT SIDE)



CRT SOCKET BOARD (COMPONENT SIDE)



ABC BOARD (COMPONENT SIDE)



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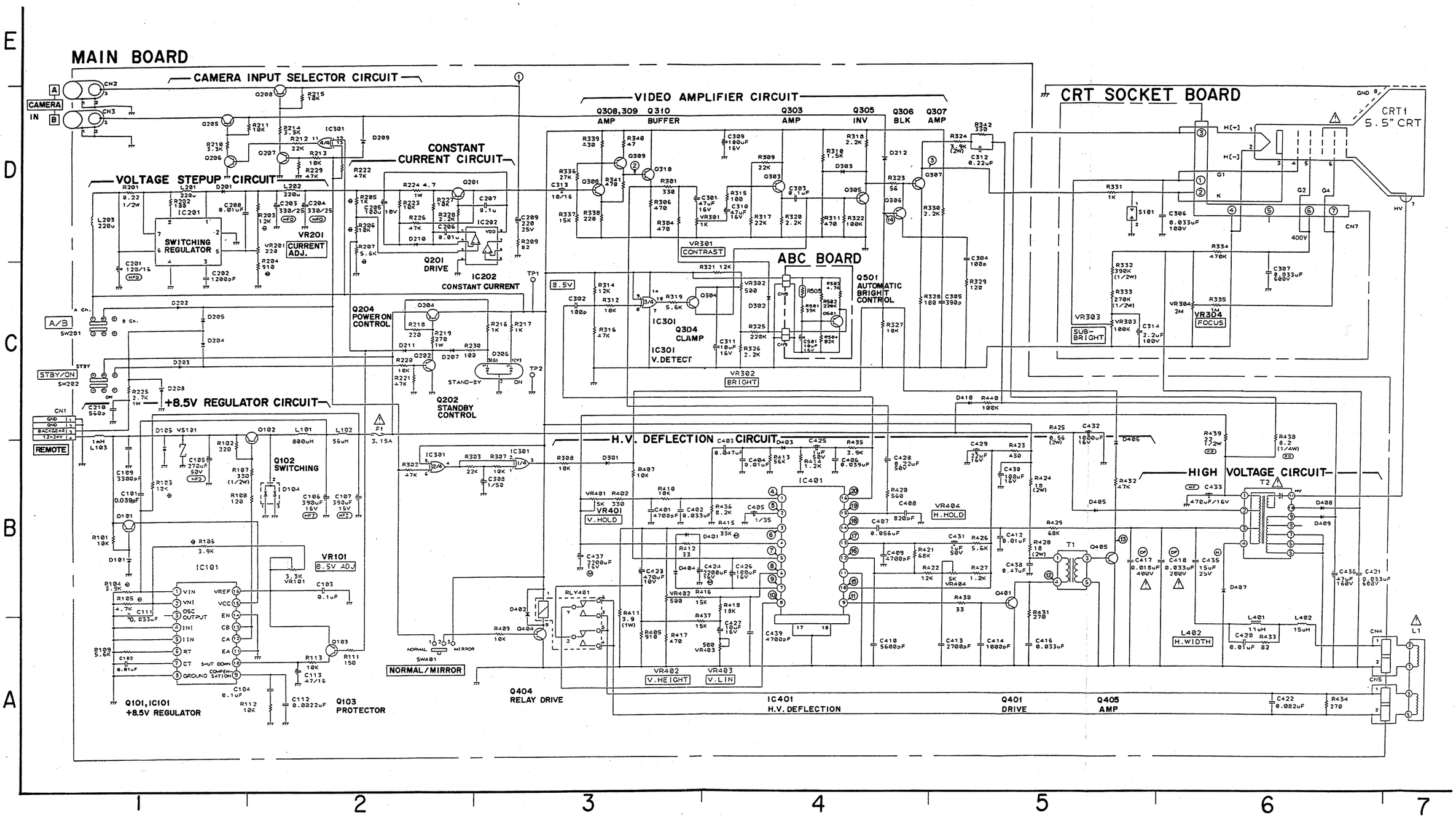
MAIN BOARD	
IC101	D4
IC201	D3
IC202	C3
IC301	B2
IC401	A2
Q101	C4
Q102	C4
Q103	D4
Q201	D3
Q202	D1
Q204	D1
Q205	D2
Q206	D2
Q207	D2
Q208	D2
Q303	C2
Q304	C2
Q305	C2
Q306	C2
Q307	C1
Q308	C2
Q309	C2
Q310	C2
Q401	B3
Q404	A1
Q405	B4
D101	C4
D104	C4
D105	C4
D201	D3
D202	C1
D203	C1
D204	C1
D205	C1
D206	D1
D207	D1
D208	D1
D209	C2
D210	C3
D211	D3
D212	B2
D301	B1
D302	B1
D303	C2
D401	B2
D402	A1
D403	B2
D404	A2
D405	B4
D406	B3
D407	A4
D408	B3
D409	A3
D410	B3

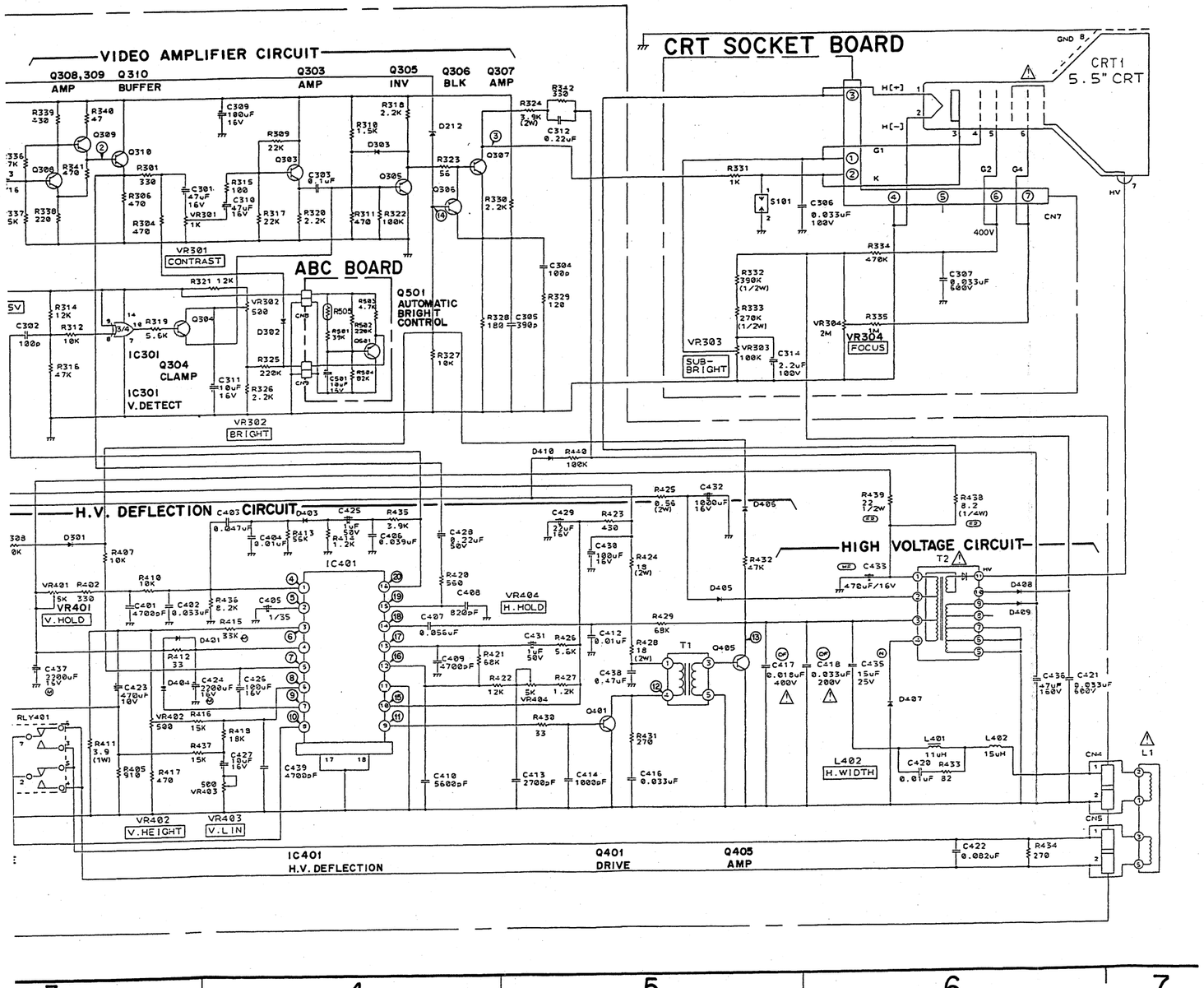
PRODUCT SAFETY NOTICE

COMPONENT IDENTIFIED WITH THE "⚠" MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN SERVICING ANY OF THESE COMPONENTS, IT IS ESSENTIAL THAT ONLY MANUFACTURE'S SPECIFIED PARTS BE USED.

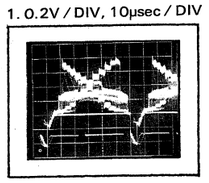
SCHEMATIC DIAGRAM OF MAIN/CRT SOCKET BOARD



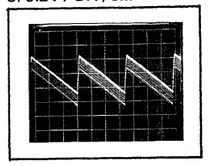
SCHEMATIC DIAGRAM OF MAIN/CRT SOCKET BOARD



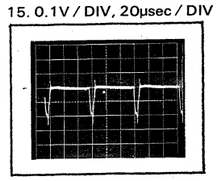
1. 0.2V / DIV, 10µsec / DIV



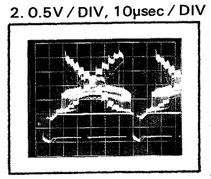
8. 0.2V / DIV, 5msec / DIV



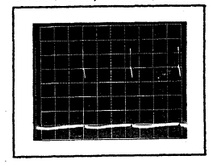
15. 0.1V / DIV, 20µsec / DIV



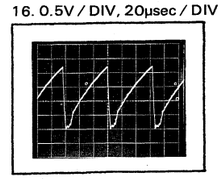
2. 0.5V / DIV, 10µsec / DIV



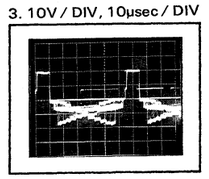
9. 2V / DIV, 5msec / DIV



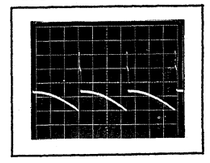
16. 0.5V / DIV, 20µsec / DIV



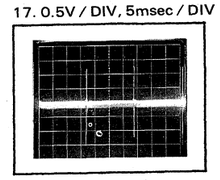
3. 10V / DIV, 10µsec / DIV



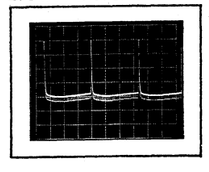
10. 5V / DIV, 5msec / DIV



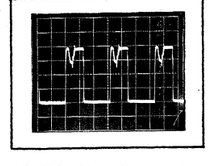
17. 0.5V / DIV, 5msec / DIV



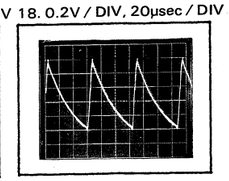
4. 0.5V / DIV, 5msec / DIV



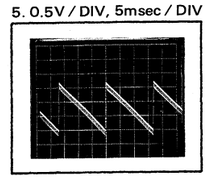
11. 0.2V / DIV, 20µsec / DIV



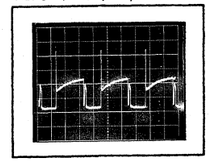
18. 0.2V / DIV, 20µsec / DIV



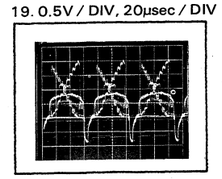
5. 0.5V / DIV, 5msec / DIV



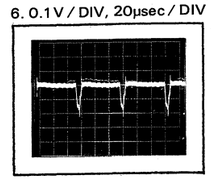
12. 5V / DIV, 20µsec / DIV



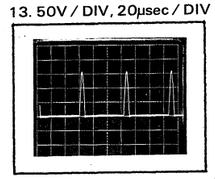
19. 0.5V / DIV, 20µsec / DIV



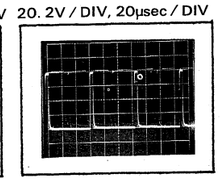
6. 0.1V / DIV, 20µsec / DIV



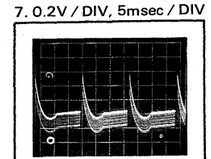
13. 50V / DIV, 20µsec / DIV



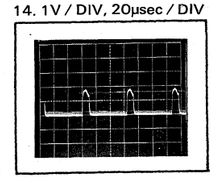
20. 2V / DIV, 20µsec / DIV



7. 0.2V / DIV, 5msec / DIV



14. 1V / DIV, 20µsec / DIV



	IC101	IC201	IC202	IC301	IC401
Pin 1	2.4	8.0	12.7	8.4	4.7
2	2.4	0	15.0	1.3	6.5
3	0	0.6	15.0	8.4	3.3
4	0	0	0	0	10.2
5	0	1.2	2.0	0	1.2
6	0.6	8.3	1.9	8.4	1.8
7	2.2	8.2	15.7	6.7	10.2
8	0	4.9	15.0	0	5.9
9	2.8			1.5	0.3
10	0			8.4	6.6
11	0			0	0
12	3.9			0	3.4
13	3.9			0	4.0
14	0			0	2.2
15	8.4			0	4.9
16	5.0			0	1.5

	B	C	E
Q101	9.1	11.7	8.4
102	11.1	8.8	11.7
103	6.4	0	5.0
201	14.3	1.1	15.0
202	0.7	0	0
204	7.8	8.4	8.5
303	4.2	8.4	3.5
304	0	0	1.6
305	1.6	0	2.2
306	0.7	2.2	1.7
307	2.2	72.7	1.7
308	2.6	7.4	1.9
309	7.4	5.1	8.1
310	5.1	8.4	4.4
401	0.2	5.8	0
405	0	12.0	0

Note: The value indicated in schematic diagram should be read as follows:

□ □ □
- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:
- 330 → 33 x 10^0 = 33Ω
- 561 → 56 x 10^1 = 560Ω
- 123 → 12 x 10^3 = 12kΩ
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The suffix attached to capacitance indicates a type of capacitor.

<Index>

MAIN BOARD

IC101	B1
IC201	D1
IC202	D3
IC301	C3
IC401	B4
Q101	B1
Q102	C2
Q103	A2
Q201	D2
Q202	C2
Q204	C2
Q205	D1
Q206	D1
Q207	D2
Q208	D2
Q303	D4
Q304	C3
Q305	D4
Q306	D4
Q307	D4
Q308	D3
Q309	D3
Q310	D3
Q401	B5
Q404	A3
Q405	B5
D101	B1
D104	B2
D105	B1
D201	D1
D202	C1
D203	C1
D204	C1
D205	C1
D206	C3
D207	C2
D208	C1
D209	D2
D210	D2
D211	C2
D212	D4
D301	B3
D302	C4
D303	D4
D401	B3
D402	B3
D403	B4
D404	B3
D405	B5
D406	B5
D407	B6
D408	B6
D409	B6
D410	C5

<Index>

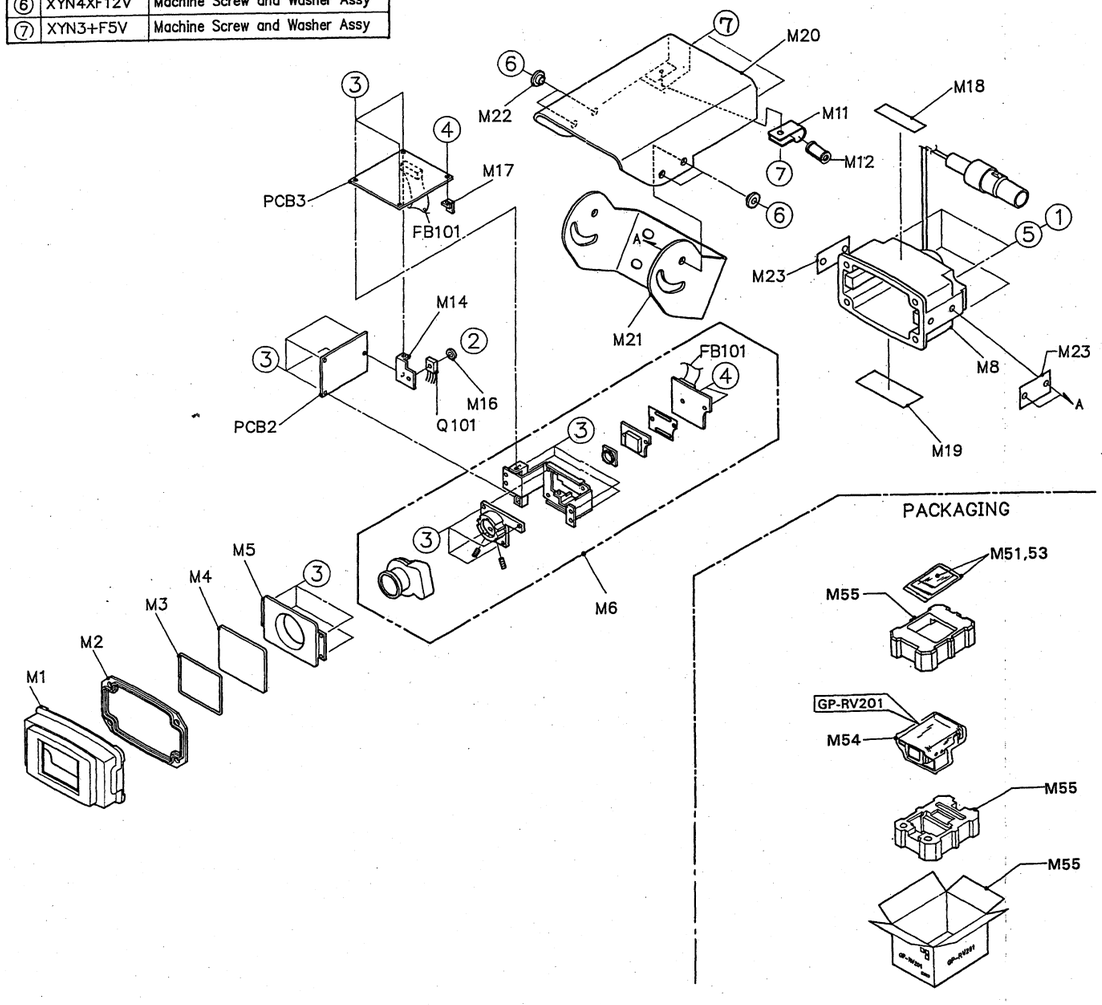
ABC BOARD

Q501	C4

FOR REAR VIEW MONITOR (GP-RV201E)

◯ Numbers show screws, washers, nuts, etc.

No.	Screws	Description
①	XSB4+45V	Binding Head Screws
②	XSB3+6FX	Binding Head Screws
③	XYN26+J6FN	Machine Screw and Washer Assy
④	XYN26+F6FX	Machine Screw and Washer Assy
⑤	XWE4V	Small Round Plain Washer
⑥	XYN4XF12V	Machine Screw and Washer Assy
⑦	XYN3+F5V	Machine Screw and Washer Assy

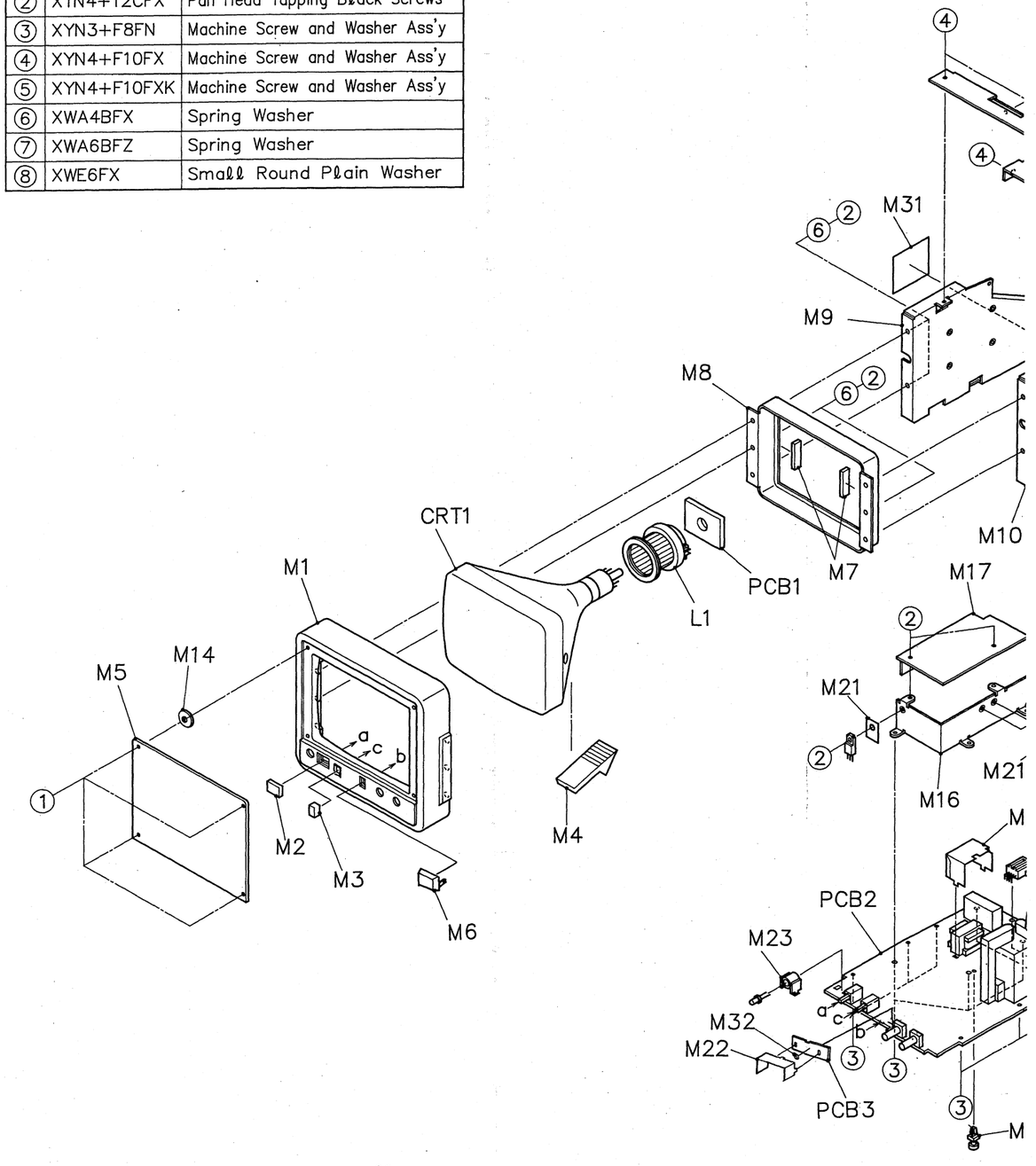


EXPLODED VIEW

◯ Numbers show screws, washers, nuts, etc.

No.	Screws	Description
①	XTN2.6+8CFN	Pan Head Tapping Black Screws
②	XTN4+12CFX	Pan Head Tapping Black Screws
③	XYN3+F8FN	Machine Screw and Washer Ass'y
④	XYN4+F10FX	Machine Screw and Washer Ass'y
⑤	XYN4+F10FXK	Machine Screw and Washer Ass'y
⑥	XWA4BFX	Spring Washer
⑦	XWA6BFZ	Spring Washer
⑧	XWE6FX	Small Round Plain Washer

FOR REAR VIEW

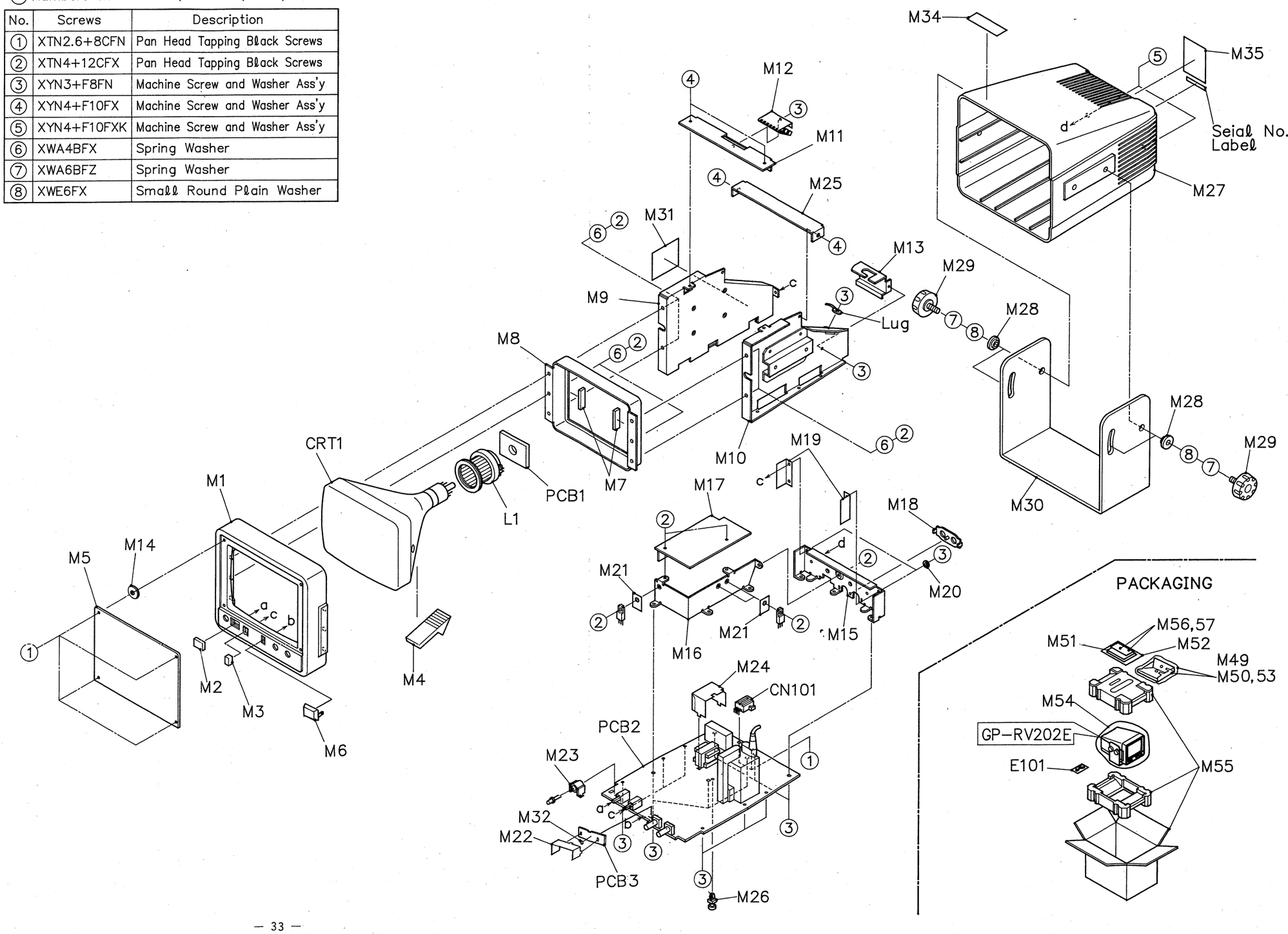


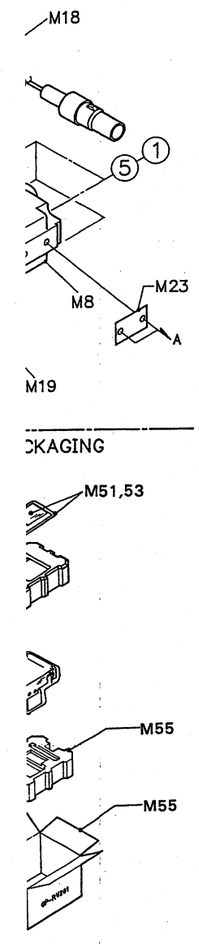
EXPLODED VIEW

◯ Numbers show screws, washers, nuts, etc.

No.	Screws	Description
①	XTN2.6+8CFN	Pan Head Tapping Black Screws
②	XTN4+12CFX	Pan Head Tapping Black Screws
③	XYN3+F8FN	Machine Screw and Washer Ass'y
④	XYN4+F10FX	Machine Screw and Washer Ass'y
⑤	XYN4+F10FXK	Machine Screw and Washer Ass'y
⑥	XWA4BFX	Spring Washer
⑦	XWA6BFZ	Spring Washer
⑧	XWE6FX	Small Round Plain Washer

FOR REAR VIEW MONITOR (GP-RV202E)





PACKAGING

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "<!>" mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited,

REF.NO.	PART NO.	DESCRIPTION
REAR VIEW CAMERA GP-RV201E		
MISCELLANEOUS		
PB101	YWRV1A	Flexible Board
Q101 <!>	2SC1568-RST	Transistor
M1	YWV5KA1313A2	Front Case
M2	YWV7CA0053A3	Sealing Packing for Case
M3	YWV7CA0052A4	Sealing Packing for Glass
M4	YWV1SA0092A4	Front Glass
M5	YWV2CA0377A4	Hold Plate
M6	YWVAKA1214AN	Head Optical Assy
M8	YWVAKA1213AN	Rear Case Assy
M11	YWV2GA0123A4	Cord Clamp
M12	YWV2GA0124A4	Cord Clamp
M14	YWV2SA2538A4	Mounting Angle
M16	YFN074A	Insulator Washer
M17	YWV2SA2539A4	Mounting Angle
M18	YFV7MA0099A4	Safety Label
M19	YWV7QA3218A4	Main Label
M20	YWV5EA1349A2	Cover
M21	YWV2SA2543A3	Bracket
M22	YWV1KA0175A4	Washer
M23	YWV1KA0174A4	Washer
POWER BOARD		
PCB2 (RTL)	YWVKCRV1AP1A	Printed Circuit Board Assy
IC1,2	YW78L05UATE2	IC
IC3	YWLM358DB	IC
IC4	YWNJM3416	IC
Q1	XP4601	Transistor
Q2,4	2SD1819-QRS	Transistor
Q8	2SB766A-QR	Transistor
Q10	XP4601	Transistor
Q11	XP4501	Transistor
Q12	2SC2404-CD	Transistor
Q13	XP4601	Transistor

REF.NO.	PART NO.	DESCRIPTION	
D2	MA3062	Diode	
D5	MA141K	Diode	
R3	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R6	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R8,9	ERJ14YJ4R3	Carbon	4.3 ohms 1/16W
R12	ERJ14YJ241	Carbon	240 ohms 1/16W
R13	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R14	ERJ14YJ241	Carbon	240 ohms 1/16W
R16-18	ERJ14YJ241	Carbon	240 ohms 1/16W
R20	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R21	ERJ3GEYJ620	Carbon	62 ohms 1/16W
R22	ERJ3GEYJ121	Carbon	120 ohms 1/16W
R23	ERJ14YJ241	Carbon	240 ohms 1/16W
R24	ERJ14YJ4R7	Carbon	4.7 ohms 1/16W
R27	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R28	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R30	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R37	YWR0816P222D	Metal	2.2K ohms 1/16W
R40	YWR0816P682D	Metal	6.8K ohms 1/16W
R42	YWR0816P332D	Metal	3.3K ohms 1/16W
R43	YWR0816R104D	Metal	100K ohms 1/16W
R51	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R52	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R53,54	YWR0816P103D	Metal	10K ohms 1/16W
R55	YWR0816R363D	Metal	36K ohms 1/16W
R56	YWR0816P203D	Metal	20K ohms 1/16W
R57	YWR0816P272D	Metal	2.7K ohms 1/16W
R58,59	YWR0816P241D	Metal	240 ohms 1/16W
R60	YWR0816P152D	Metal	1.5K ohms 1/16W
R61	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R62	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R63	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R64	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R65	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R66	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R67	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R68	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R69	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R70	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R72	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R73	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R74	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R75	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R76	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R77	ERJ3GEYJ154	Carbon	150K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION
R78	ERJ3GEYJ1R0	Carbon 1 ohms1/16W
R79	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R80	ERJ14YJ150	Carbon 15 ohms 1/16W
R81	ERJ14YJ160	Carbon 16 ohms 1/16W
VR1	EVM7JGA30B24	Variable Resistor 20K ohms
C1,2	YF400104FZT	Ceramic 0.1 µF
C5,6	ECEV0JV101	Electrolytic 100 µF 6.3V
C7	ECEV1CV470	Electrolytic 47 µF 16V
C8	ECEV0GV221	Electrolytic 220 µF 4V
C9	ECEV0JV101	Electrolytic 100 µF 6.3V
C10	ECEA1CGE221	Electrolytic 22 µF 16V
C20	ECST1CD226	Tantalum 22 µF 16V
C21,22	YW5F104Z2VB	Ceramic 0.1 µF
C23	TAJM226M004	Electrolytic 22 µF 4V
C24	ECST1CD226	Tantalum 22 µF 16V
C25	YW5F104Z2VB	Ceramic 0.1 µF
C26	YW5X222K5VB	Ceramic 2200 pF
C27	YW5F473Z2VB	Ceramic 0.047 µF
C28	YW5F104Z2VB	Ceramic 0.1 µF
C29	ECST1AB106	Tantalum 10 µF 10V
L2-6	YWBLM21B03PB	Coil
CN1	YW41756312	12-pin Connector
CN2	YW3611121029	2-pin Connector
CN3	YWB4BZRSM3TF	4-pin Connector
CN4	YWB3BZRSM3TF	3-pin Connector
TP1-3	YWRCT2125TPV	Test- Pin

PROCESS BOARD

PCB3 (RTL)	YWVKBRV1AE1A	Printed Circuit Board Assy
IC1	YWNJM3416	IC
IC2	YWUPD16501GS	IC
IC3	YWCXA1310AQ	IC
IC4	MN5168	IC
IC8-10	YWTC7S04F	IC
Q2	XP4601	Transistor
Q5	2SD601A-QR	Transistor
Q6	2SD601-RS	Transistor
Q7,8	2SC4081	Transistor
Q10	XP4501	Transistor
Q12	2SB709-Q	Transistor
D1,2	YWRB421D	Diode
D3	MA141K	Diode
D5,6	YWRB421D	Diode
D7,8	MA141K	Diode
D11	MA153	Diode
D12	MA143	Diode
R1	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R2	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R4	ERJ3GEYJ1R0	Carbon 1 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION
R6	ERJ3GEYJ242	Carbon 2.4K ohms 1/16W
R8	ERJ3GEYJ181	Carbon 180 ohms 1/16W
R9	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R10,11	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R12	YWR0816P272D	Metal 2.7K ohms 1/16W
R13	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R14	YWR0816R334D	Metal 330K ohms 1/16W
R15	YWR0816R433D	Metal 43K ohms 1/16W
R16	YWR0816P272D	Metal 2.7K ohms 1/16W
R17	ERJ3GEYJ153	Carbon 15K ohms 1/16W
R18	ERJ3GEYJ512	Carbon 5.1K ohms 1/16W
R19	ERJ3GEYJ302	Carbon 3K ohms 1/16W
R20	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R21	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R22	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R24	YWR0816P132D	Metal 1.3K ohms 1/16W
R25	ERJ3GEYJ153	Carbon 15K ohms 1/16W
R26	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R27,28	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R29	ERJ3GEYJ152	Carbon 1.5K ohms 1/16W
R30	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R31	ERJ3GEYJ561	Carbon 560 ohms 1/16W
R32	ERJ3GEYJ752	Carbon 7.5K ohms 1/16W
R33,34	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R35	ERJ3GEYJ105	Carbon 1M ohms 1/16W
R36	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R37	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R39	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R41,42	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R43	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R44	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R46	ERJ3GEYJ392	Carbon 3.9K ohms 1/16W
R48	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R50	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R52	ERJ3GEYJ122	Carbon 1.2K ohms 1/16W
R54,58	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R59	ERJ3GEYJ271	Carbon 270 ohms 1/16W
R60	ERJ3GEYJ132	Carbon 1.3K ohms 1/16W
R61,62	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R63	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R64	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R65,68	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R69	ERJ3GEYJ112	Carbon 1.1K ohms 1/16W
R70	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R84	YWR0816P202D	Metal 2K ohms 1/16W
R85	YWR0816P302D	Metal 3K ohms 1/16W
R87	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R88	YWR0816P133D	Metal 13K ohms 1/16W
R90	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R92	ERJ6GEY0R00	Carbon 0 ohms 1/10W
VR1	EVM7JGA30B24	Variable Resistor 20K ohms
VR2	EVM7JGA30B53	Variable Resistor 5K ohms
VR3	EVM7JGA30B14	Variable Resistor 10K ohms
VR4	EVM7JGA30B52	Variable Resistor 500 ohms
C1	YW5X103K2VB	Ceramic 0.01 µF

REF.NO.	PART NO.	DESCRIPTION
C2,3	YW5F104Z2VB	Ceramic 0.1 µF
C5	YW5F103Z5VB	Ceramic 0.01 µF
C6	YW5CH470J5VB	Ceramic 47 pF
C7-9	YW5F104Z2VB	Ceramic 0.1 µF
C10,11	YW5CH470J5VB	Ceramic 47 pF
C12	YW5F104Z2VB	Ceramic 0.1 µF
C13	YW5CH470J5VB	Ceramic 47 pF
C14-17	YW5F104Z2VB	Ceramic 0.1 µF
C18	YW400105FZ	Ceramic 1 µF
C20	YW5CH150J5VB	Ceramic 15 pF
C21	YW5F104Z2VB	Ceramic 0.1 µF
C23	YW5CH300J5VB	Ceramic 30 pF
C28	YW5F104Z2VB	Ceramic 0.1 µF
C29	YW5CH820J5VB	Ceramic 82 pF
C31,34	YW5CH160J5V	Ceramic 16 pF
C41-44	ECEV1CV470	Electrolytic 47 µF 16V
C45	ECEV1CV220	Electrolytic 22 µF 16V
C46-49	ECEV1CV100	Electrolytic 10 µF 16V
C50	ECEV1EV4R7	Electrolytic 4.7 µF 25V
C51	ECST1VY104ZR	Tantalum 0.1 µF 35V
C52	ECST1VY224Z	Tantalum 0.22 µF 35V
C54,55	ECST1CD336	Tantalum 33 µF 16V
C56	TAJC106M016	Electrolytic 10 µF 16V
C57	ECST1CC156	Tantalum 15 µF 16V
C58	ECST1AB106	Tantalum 10 µF 10V
C59	ECST1VC335	Tantalum 3.3 µF 35V
C60,61	ECST1VB105ZR	Tantalum 1 µF 35V
C62	TAJA105M016	Electrolytic 1 µF 16V
C64	ECST1CC156	Tantalum 15 µF 16V
C65	ECST1AY225ZR	Tantalum 2.2 µF 10V
C66	TAJM226M004	Electrolytic 22 µF 4V
C68	YW5CH070J5VB	Ceramic 7 pF
L2,3	ELJFA680KF	Coil 68 µH
L4	ELJFA151KB	Coil 150 µH
L5,6	ELJFC8R2MF	Coil 8.2 µH
L7	ELJSC560K	Coil 56 µH
L8	F2012C180KT	Coil 18 µH
X1	YWDX19R066	Crystal Oscillator
CN1	YW522051590	15-pin Connector
CN2	YW71746452	12-pin Connector
TP1-5	YWRCT2125TPV	Test- Pin
TP7	YWRCT2125TPV	Test- Pin

ACCESSORY PARTS/PACKAGING PARTS

M51	YWV8QA3241AN	Operating Instruction
M53	YWT20X35C03	Polyethylene Bag
M54	YWT20X35C03	Polyethylene Bag
M55	YWV9CA2218AN	Packaging Assy

REF.NO.	PART NO.	DESCRIPTION

MONITOR GP-RV202E

MISCELLANEOUS

CRT1 <!>	E2799B4	Cathode Ray Tube
L1 <!>	YWMDM75201	Deflection Coil
M1	YWV5WB1532A1	Front EscusionPanel
M2	YWV6JA0042A4	Mode Selection Switch Cover
M3	YWV6JA0063A4	Camera Selection Switch Cover
M4	YFV2NA0044B4	Spacer for York
M5	YWV5EA1341A3	Non Glare Panel
M6	YWV5EA1342A3	Button Cover for ABC
M7	YWV2FA0655A4	Cushion(X2)
M8	YWV2SA2549A2	Mounting Angle for CRT
M9	YWV2SA2551A2	Mounting Angle for Left Side
M10	YWV2SA2550A2	Mounting Angle for Right Side
M11	YWV2SA2552A3	Mounting Angle
M12	YWV4JA0157A4	Spring for Earth
M13	YWV2SA2555A4	Mounting Angle
M14	YWV2NA0391A4	Spacer
M18	YWV2CA0378A2	Hold Plate
M20	YWCW301	Washer
M25	YWV2SA2634A4	Chassis Angle
M26	YWMPS080	Spacer
M27	YWV5KB1316A0	Rear Case
M28	YWV1KA0076A4	Washer
M29	YWV1EA0271A3	Monitor Fixing Screw
M30	YWV2SA2553A2	Monitor Fixing Bracket
M31	YWV7MA0444A4	Safety Label
M34	YWS-XEGRB03A	X-Ray Label
M35	YWV7QA3207A4	Main Label

REF.NO.	PART NO.	DESCRIPTION
CRT SOCKET BOARD		
PCB1 (RTL)	YWVKCV202P1A	Printed Circuit Board Assy
R331	ERDS2TJ102	Carbon 1K ohms 1/4W
R332	ERDS1TJ394	Carbon 390K ohms 1/4W
R333	ERDS1TJ274	Carbon 270K ohms 1/4W
R334	ERDS2TJ474	Carbon 470K ohms 1/4W
R335	ERD25FJ105	Carbon 1M ohms 1/4W
VR303	YWH1022A100K	Variable Resistor 100K ohms
VR304	EVMJ6U10KB26	Variable Resistor 2M ohms
C306	ECQE1333JN	Plastic 0.033 µF
C307	ECQE6333KZ	Plastic 0.033 µF
C314	ECEA2AU2R2	Electrolytic 2.2 µF 100V
CB101	YFAG20PC122F	Braker
CN7	YWP2950251	CRT Socket
MAIN BOARD		
PCB2 (RTL)	YWVKBV202E1A	Printed Circuit Board Assy
IC101	NJM3524D	IC
IC201	YWNJM2360D	IC
IC202	NJM4558DFD	IC
IC301	YWHD14070BP	IC
IC401	YWUPC1379C	IC
Q101	2SD636-QRS	Transistor
Q102	2SB946-PQ	Transistor
Q103	2SB641-QR	Transistor
Q201	2SB941-PQ	Transistor
Q202	2SD636-QRS	Transistor
Q204	2SB1151-LM	Transistor
Q205	2SB793-RS	Transistor
Q206,207	2SD636-QRS	Transistor
Q208	2SB793-RS	Transistor
Q303,304	2SD636-QRS	Transistor
Q305	2SB641-QR	Transistor
Q306	2SD636-QRS	Transistor
Q307	2SC2258	Transistor
Q308	2SD636-QRS	Transistor
Q309	2SB641-QR	Transistor
Q310	2SD636-QRS	Transistor
Q401	2SC1567-RS	Transistor
Q404	2SD636-QRS	Transistor
Q405	2SD1274B	Transistor
D101	YWUZ9.1BSC	Diode
D104	ESAB82M004	Diode
D105	YWERB84009	Diode
D201	YWEK14H6K	Diode
D202-205	MA165	Diode
D206	LN11WP34	LED

REF.NO.	PART NO.	DESCRIPTION
D207	MA165	Diode
D208	YWUZ8.2BSA	Diode
D209	YWUZ13BSC	Diode
D210,211	MA165	Diode
D212	YWUZ12BSC	Diode
D301-303	MA165	Diode
D401-403	MA165	Diode
D404	EM01Z	Diode
D405	YWRU4AM	Diode
D406	MA165	Diode
D407	YWRU4AM	Diode
D408,409	ES01F	Diode
D410	MA185	Diode
VS101	ERZM14DK470	ZNR
R101	ERDS2TJ103	Carbon 10K ohms 1/4W
R102	ERDS2TJ221	Carbon 220 ohms 1/4W
R103	ER0S2CKF1002	Metal 10K ohms 1/4W
R104	ER0S2CKF3901	Metal 3.9K ohms 1/4W
R105	ER0S2CKF4701	Metal 4.7K ohms 1/4W
R106	ER0S2CKF3901	Metal 3.9K ohms 1/4W
R107	ERDS1TJ331	Carbon 330 ohms 1/4W
R108	ERDS2TJ121	Carbon 120 ohms 1/4W
R109	ERDS2TJ562	Carbon 5.6K ohms 1/4W
R111	ERDS2TJ151	Carbon 150 ohms 1/4W
R112,113	ERDS2TJ103	Carbon 10K ohms 1/4W
R201	ERX12SJR22	Metal 0.22 ohms 1/2W
R202	ERDS2TJ181	Carbon 180 ohms 1/4W
R203	ER0S2CKF1202	Metal 12K ohms 1/4W
R204	ER0S2CKF9100	Metal 910 ohms 1/4W
R205	ER0S2CKF1001	Metal 1K ohms 1/4W
R206	ER0S2CKF1002	Metal 10K ohms 1/4W
R207	ER0S2CKF5601	Metal 5.6K ohms 1/4W
R209	ERDS2TJ820	Carbon 82 ohms 1/4W
R210	ERDS2TJ332	Carbon 3.3K ohms 1/4W
R211	ERDS2TJ103	Carbon 10K ohms 1/4W
R212	ERDS2TJ223	Carbon 22K ohms 1/4W
R213	ERDS2TJ103	Carbon 10K ohms 1/4W
R214	ERDS2TJ332	Carbon 3.3K ohms 1/4W
R215	ERDS2TJ103	Carbon 10K ohms 1/4W
R216,217	ERDS2TJ102	Carbon 1K ohms 1/4W
R218	ERDS2TJ221	Carbon 220 ohms 1/4W
R219	ERG1SJ271	Metal 270 ohms 1W
R220	ERDS2TJ103	Carbon 10K ohms 1/4W
R221,222	ERDS2TJ473	Carbon 47K ohms 1/4W
R223	ERDS2TJ103	Carbon 10K ohms 1/4W
R224	ERX1SG4R7	Metal 4.7 ohms 1W
R225	ERG1SJ272	Metal 2.7K ohms1W
R226	ERDS2TJ473	Carbon 47K ohms 1/4W
R227	ERDS2TJ103	Carbon 10K ohms 1/4W
R228	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R229	ERDS2TJ473	Carbon 47K ohms 1/4W
R230	ERDS2TJ101	Carbon 100 ohms 1/4W
R301	ERDS2TJ331	Carbon 330 ohms 1/4W
R302	ERDS2TJ473	Carbon 47K ohms 1/4W
R303	ERDS2TJ223	Carbon 22K ohms 1/4W

REF.NO.	PART NO.	DESCRIPTION
R304,306	ERDS2TJ471	Carbon 470 ohms 1/4W
R307,308	ERDS2TJ103	Carbon 10K ohms 1/4W
R309	ERDS2TJ223	Carbon 22K ohms 1/4W
R310	ERDS2TJ152	Carbon 1.5K ohms 1/4W
R311	ERDS2TJ471	Carbon 470 ohms 1/4W
R312	ERDS2TJ103	Carbon 10K ohms 1/4W
R314	ERDS2TJ123	Carbon 12K ohms 1/4W
R315	ERDS2TJ101	Carbon 100 ohms 1/4W
R316	ERDS2TJ473	Carbon 47K ohms 1/4W
R317	ERDS2TJ223	Carbon 22K ohms 1/4W
R318	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R319	ERDS2TJ562	Carbon 5.6K ohms 1/4W
R320	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R321	ERD25FJ123	Carbon 12K ohms 1/4W
R322	ERDS2TJ104	Carbon 100K ohms 1/4W
R323	ERDS2TJ560	Carbon 56 ohms 1/4W
R324	ERG2SJ392	Metal 3.9K ohms 2W
R325	ERDS2TJ224	Carbon 220K ohms 1/4W
R326	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R327	ERDS2TJ103	Carbon 10K ohms 1/4W
R328	ERDS2TJ181	Carbon 180 ohms 1/4W
R329	ERDS2TJ121	Carbon 120 ohms 1/4W
R330	ERDS2TJ222	Carbon 2.2K ohms 1/4W
R336	ERDS2TJ273	Carbon 27K ohms 1/4W
R337	ERDS2TJ153	Carbon 15K ohms 1/4W
R338	ERDS2TJ221	Carbon 220 ohms 1/4W
R339	ERDS2TJ431	Carbon 430 ohms 1/4W
R340	ERDS2TJ470	Carbon 47 ohms 1/4W
R341	ERDS2TJ471	Carbon 470 ohms 1/4W
R342,402	ERDS2TJ331	Carbon 330 ohms 1/4W
R405	ERDS2TJ911	Carbon 910 ohms 1/4W
R407,409	ERDS2TJ103	Carbon 10K ohms 1/4W
R410	ERDS2TJ103	Carbon 10K ohms 1/4W
R411	ERX1SJ3R9	Metal 3.9 Ohms 1W
R412	ERDS2TJ330	Carbon 33 ohms 1/4W
R413	ERDS2TJ563	Carbon 56K ohms 1/4W
R414	ERDS2TJ122	Carbon 1.2K ohms 1/4W
R415	ER0S2CKF3302	Metal 33K ohms 1/4W
R416	ERDS2TJ153	Carbon 15K ohms 1/4W
R417	ERDS2TJ471	Carbon 470 ohms 1/4W
R418	ERDS2TJ183	Carbon 18K ohms 1/4W
R420	ERDS2TJ561	Carbon 560 ohms 1/4W
R421	ERDS2TJ683	Carbon 68K ohms 1/4W
R422	ERDS2TJ123	Carbon 12K ohms 1/4W
R423	ERDS2TJ431	Carbon 430 ohms 1/4W
R424	ERG2SJ180	Metal 18 ohms 2W
R425	ERX2SJR56	Metal 0.56 ohms 2W
R426	ERDS2TJ562	Carbon 5.6K ohms 1/4W
R427	ERDS2TJ122	Carbon 1.2K ohms 1/4W
R428	ERG2SJ180	Metal 18 ohms 2W
R429	ERDS2TJ683	Carbon 68K ohms 1/4W
R430	ERDS2TJ330	Carbon 33 ohms 1/4W
R431	ERDS2TJ271	Carbon 270 ohms 1/4W
R432	ERDS2TJ473	Carbon 47K ohms 1/4W
R433	ERDS2TJ820	Carbon 82 ohms 1/4W

REF.NO.	PART NO.	DESCRIPTION
R434	ERDS2TJ271	Carbon 270 ohms 1/4W
R435	ERDS2TJ392	Carbon 3.9K ohms 1/4W
R436	ER0S2CKF8201	Metal 8.2K ohms 1/4W
R437	ERDS2TJ153	Carbon 15K ohms 1/4W
R438	ERD2FCJ8R2	Fuse Resistor 8.2 ohms
R439	ERQ12AJ220	Fuse Resistor 22 ohms
R440	ERDS2TJ104	Carbon 100K ohms 1/4W
VR101	YFH0622A3R3K	Variable Resistor 3.3K ohms
VR201	YFH0622A220	Variable Resistor 22 ohms
VR301	EVUE20E20B13	Variable Resistor 1K ohms
VR302	EVUE20E20B52	Variable Resistor 500 ohms
VR401	EVND2AA03B53	Variable Resistor 5K ohms
VR402,403	EVND2AA03B52	Variable Resistor 500 ohms
VR404	EVND2AA03B53	Variable Resistor 5K ohms
C101	ECQM1H393KZ	Plastic 0.039 µF 50V
C102	ECQB1H103JZ	Plastic 0.01 µF 50V
C103,104	ECQM1H104JZ	Plastic 0.1 µF 50V
C105	ECA1HFQ271	Electrolytic 270 µF 50V
C106,107	ECA1CFZ391	Electrolytic 390 µF 16V
C109	ECQP1332JZ	Ceramic 3300 pF
C111	ECQM1H333KZ	Plastic 0.033 µF 50V
C112	ECQB1H222JZ	Plastic 2200 pF 50V
C113	ECEA1CU470	Electrolytic 47 µF 16V
C201	ECA1CFQ121	Electrolytic 120 µF 16V
C202	ECQB1H122JZ	Plastic 1200 pF 50V
C203,204	ECA1EFQ331	Electrolytic 330 µF 25V
C205	ECEA1AU101	Electrolytic 100 µF 10V
C206	ECQB1H103JZ	Plastic 0.01 µF 50V
C207	ECQM1H104JZ	Plastic 0.1 µF 50V
C208	ECQB1H103JZ	Plastic 0.01 µF 50V
C209	ECEA1ES221	Electrolytic 220 µF 25V
C210	ECKF1H561KB	Ceramic 560 pF 50V
C301	ECEA1CU470	Electrolytic 47 µF 16V
C302	ECCF1H101J	Ceramic 100 pF 50V
C303	ECQM1H104JZ	Plastic 0.1 µF 50V
C304	ECCF1H101J	Ceramic 100 pF 50V
C305	ECCF1H391K	Ceramic 390 pF 50V
C308	ECEA1HU010	Electrolytic 1 µF 50V
C309	ECEA1CU101	Electrolytic 100 µF 16V
C310	ECEA1CU470	Electrolytic 47 µF 16V
C311	ECEA1CU100	Electrolytic 10 µF 16V
C312	ECQV1H224JZ	Plastic 0.22 µF 50V
C313	ECEA1CU100	Electrolytic 10 µF 16V
C401	ECQB1H472JZ	Plastic 4700 pF 50V
C402	ECQM1H333KZ	Plastic 0.033 µF 50V
C403	ECQM1H473JZ	Plastic 0.047 µF 50V
C404	ECQB1H103JZ	Plastic 0.01 µF 50V
C405	ECSF1VC105	Tantalum 1 µF 35V
C406	ECQM1H393KZ	Plastic 0.039 µF 50V
C407	ECQM1H563JZ	Plastic 0.056 µF 50V
C408	ECQP1H821JZ	Plastic 820 pF 50V
C409	ECQB1H472JZ	Plastic 4700 pF 50V
C410	ECQB1H562JZ	Plastic 5600 pF 50V
C412	ECQB1H103JZ	Plastic 0.01 µF 50V
C413	ECQB1H272JZ	Plastic 2700 pF 50V

REF.NO.	PART NO.	DESCRIPTION
C414	ECKF1H102KB	Ceramic 1000 pF 50V
C416	ECQM1H333KZ	Plastic 0.033 µF 50V
C417 <!>	ECQF4183JZ	Plastic 0.018 µF
C418 <!>	ECQF2333KZ	Plastic 0.033 µF 50V
C420	ECQB1H103JZ	Plastic 0.01 µF 50V
C421	ECQE6333KZ	Plastic 0.033 µF 50V
C422	ECQV1H823JZ	Plastic 0.082 µF 50V
C423	ECA1AM471	Electrolytic 470 µF 10V
C424	ECA1CM222	Electrolytic 2200 µF 16V
C425	ECEA1HU010	Electrolytic 1 µF 50V (SU)
C426	ECEA1CU101	Electrolytic 100 µF 16V
C427	ECEA1CU100	Electrolytic 10 µF 16V
C428	ECEA1HUR22	Electrolytic 0.22 µF 50V
C429	ECEA1CU220	Electrolytic 22 µF 16V
C430	ECEA1CU101	Electrolytic 100 µF 16V
C431	ECEA1HU010	Electrolytic 1 µF 50V (SU)
C432	ECEA1CGE102	Electrolytic 1000 µF 16V
C433	ECEA1CF471	Electrolytic 470 µF 16V
C435	ECEA1EW150Z	Electrolytic 15 µF 25V
C436	ECEA2CU470	Electrolytic 47 µF 160V
C437	ECA1CM222	Electrolytic 2200 µF 16V
C438	ECQV1H474JZ	Plastic 0.47 µF 50V
C439	ECQB1H472JZ	Plastic 4700 pF 50V
L101	YWFEI28801	Coil
L102	ELC12E009	Coil
L103	YWKEI28112K	Coil
L201-203	YFELC10E006	Coil
L401	ELH5L431	Coil
L402	ELH16F773	Coil
T1	TLH3412K	Low Freq Transformer
T2 <!>	ETF30L42AY	Flyback Transformer
SW201,202	YWSPUP192WNS	Push Switch
SW401	YWSSSS21211	Slide Switch
RL401	YWMR6029SR	Relay
F1 <!>	SSFR3.15AF02	Current Fuse 3.15A
CN1	YW72221247	4-pin Connector
CN2,3	YWM1768	Socket
CN4	YWRTB1.52P	2-pin Connector
CN5	YWB2BEH	2-pin Connector
CN8,9	YWRTB1.52V	2-pin Connector
TP12,13	YW32BM7R5	Test- Pin
M15	YWV2SA2554A3	Mounting Angle
M16	YWV7DA0365A3	Heat Sink
M17	YWV2HA1137A3	Shield Plate
M18	YWV2CA0378A2	Hold Plate for Connector
M19	YWV2PA0587A4	Insulator Paper
M21	YWAC-256	Insulator Sheet for Transistor
M23	YWV3CA0286A3	LED Holder
M24	YWV2HA1138A4	Shield Cover

REF.NO.	PART NO.	DESCRIPTION
A B C BOARD		
PCB3 (RTL)	YWVKDV202E1A	Printed Circuit Board Assy
Q501	2SB641-QR	Transistor
R501	ERDS2TJ393	Carbon 39K ohms 1/4W
R502	ERDS2TJ224	Carbon 220K ohms 1/4W
R503	ERDS2TJ472	Carbon 4.7K ohms 1/4W
R504	ERDS2TJ823	Carbon 82K ohms 1/4W
R505	YWU5E12LC	Photo Coupler
C501	ECEA1CU100	Electrolytic 10 µF 16V
CN8,9	YWTIXP02PB1	2-pin Connector
M22	YWV2HA1173A3	Shield Cover
M32	YWKL04	LED Holder
ACCESSORY PARTS/PACKAGING PARTS		
E101 <!>	YWPWHRV123M	Power Cable
M49	YWV6BA0048A2	Hood
M50	YWV2FA0666A4	Cushion for Hood
M51	YWV8QA3222AN	Operating Instructions
M52	YWPE26X40C05	Polyethylene Bag
M53	YWT20X35C03	Polyethylene Bag
M54	XZB45X63C05	Polyethylene Bag
M55	YWV9CA2198AN	Packaging Assy
M56	YWV7SA1912A4	Label
M57	YWT10X16C03	Polyethylene Bag

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